USSR

UDC 617-001.28-036.11-092.9-035.272.6:547.963.32

ROGACHEVA, S. A., LUZANOVA, O. V., KLYZHUK, K. N., RUSINOVA, G. G., SHAROVA, E. G., and LIBINZON, R. Ye., Institute of Biophysics, Ministry of Health USSR, Moscow

"The Therapeutic Effectiveness of High-Polymer Heterologous DNA in Dogs with Acute Radiation Sickness"

Moscow, Meditsinskaya Radiologiya, Vol 15, No 3, 1970, pp 44-48

Abstract: A study was made of the effect of high-polymer, heterologous, calf thymus DNA preparations on the course and outcome of acute radiation sickness in dogs. In the experiments, 52 dogs of both sexes, one to four years old, weighing 5-24 kilograms, were subjected to cesium-137 gamma-ray irradiation at a rate of 6 r per minute in doses of 700 and 750 r. The animals were divided into four groups: group one received injections of DNA 30-60 minutes after irradiation, groups two ard three received injections 24 and 72 hours after irradiation, respectively, and group four served as the control. The animals were distributed evenly among the groups by sex, weight and initial peripheral blood index. The therapeutic effect was evaluated according to 60-day survival, the average life of nonsurvivors, the clinical picture of acute radiation sickness, and the results of peripheral blood studies. Results of the investigations revealed that intravenous administration of calf thymus DNA increased survival in all experimental groups. Of the 18

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ROGACHEVA, S. A., et al., Meditsinskaya Radiologiya, Vol 15, No 3, 1970, pp 44-48

dogs in the control group, only two (11%) survived, while four of the 12 dogs in group one survived, eight of 11 dogs survived in group two, and six of 11 dogs survived in group three. These results indicate that the optimum time of DNA administration is 24 hours after irradiation. It was determined that the therapeutic effect of DNA, introduced intravenously, depended on the period between irradiation and injection of the preparation.

2/2

1/2 012 UNCLASSIFIED PROCESSING DATE--13NOV70

TITLE--A NEW INJECTABLE MEDICINAL FORM OF ETHOXIDE -U-

AUTHOR-(04)-PERSHIN, G.N., ZYKOVA, T.N., SHAROVA, S.A., KUTCHAK, S.N.

COUNTRY OF INFO--USSR

SOURCE--FARMAKOL. TOKSIKOL. (MOSCOW) 1970, 33(1), 101-5

DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--TUBERCULOSIS, ANTITUBERCULAR DRUG, MOUSE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1994/1159 STEP NO--UR/0390/70/033/001/0101/0105

CIRC ACCESSION NO--AP0115178

UNCLASSIFIED

2/2 012 UNCLASSIFIED PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0115178

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ETHOXIDE (4, 4 PRIME DIETHOXYDITHIOCARBANILIDE) IN OIL AND H SUB2 O SUSPENSIONS ADMINISTERED I.M. TO MICE WAS 10 FOLD MORE EFFECTIVE THERAPEUTICALLY THAN WHEN ADMINISTERED ORALLY. THE INOCULATION INDEX FOR TUBERCULOSIS BACILLI FROM THE LUNGS OF MICE INJECTED I.M. WITH ETHOXIDE SUSPENSION ONCE A WEEK AT 80 OR 40 MG WAS HALF THAT IN CONTROLS OR IN MICE RECEIVING ETHOXIDE DAILY ORALLY. ETHOXIDE IN A 20PERCENT H SUB2 O AND 20PERCENT OIL SUSPENSION HAD NO OVERALL TOXIC OR LOCAL IRRITATING ACTION. AQ. SUSPENSIONS CAUSED MORE GRADUAL AND MORE ABUNDANT DEVELOPMENT OF CONNECTIVE TISSUE, BUT OIL SUSPENSIONS FACILITATED DEPOSITION AND CAUSED LESS SIGNIFICANT REACTIVE CHANGES IN THE DEVELOPING GRANULOCYTIC TISSUE. AT 20PERCENT OIL SUSPENSION OF ETHOXIDE IS RECOMMENDED FOR CLIN. STUDIES ON TUBERCULOSIS PATIENTS. FACILITY: LAB. KHIMIOTER. INFEKTS. ZABOL., VSES. NAUCH.-ISSLED. KHIM FARM INST. IM. ORDZHONIKIDZE, MOSCOW, USSR.

UNCLASSIFIED

USSR

UDC 531.74.(017)(083.76)

BOGUSLAVSKIY, M. G., ELIASHBERG, B. M., SHAROVA, Ye. Ye., and FEDOTOVA, L. I.

"State Primary Standard Unit of a Plane Angle -- the Radian"

Moscow, Izmeritel'naya Tekhnika, No 7, 1972, pp 9-10

Abstract: A complex of equipment for reproducing and storing the unit of a plane angle equal to 2 π rad, or a part thereof, and for transmitting the size of the unit, by means of secondary standards and standard measurement facilities, to operating measurement facilities, was developed and tested in 1970. The State primary standard unit of a plane angle comprises a complex of the following measuring equipment: a 36-faced prism, produced at the All-Union Scientific Research Institute of Metrology in 1958; a standard goniometric autocollimation unit consisting of photoelectric autocollimators with an electronic digital readout device, and a device for holding and turning the polyhedral prism. 36-faced prism No 1 has been certified on the State primary standard. The mean-square error of the measurement result did not exceed 0.02". The new primary standard facility has been ratified in January, 1972 at a meeting of the Gosstandart, USSR as the State primary standard unit of a plane angle. 4 figures.

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1/2 019 UNCLASSIFIED PROCESSING DATE--13NOV70

TITLE--EVALUATION OF THE BROMSULFALEIN TEST IN CHRONIC HEPATITIS AND CIRRHOSIS OF THE LIVER -U-

AUTHOR-(03)-ZHEREBTSOV, L.A., SHAROVA, YU.A., ZAMCHIY, A.A.

COUNTRY OF INFO--USSR

SOURCE--KLINICHESKAYA MEDITSINA, 1970, VOL 48, NR 6, PP 52-58

DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--TEST, LIVER FUNCTION, HEPATITIS, CIRRHOSIS, BILIRUBIN, ERYTHROCYTE, MERCURY COMPOUND, CHLORIDE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3005/0992 STEP NO--UR/0497/70/048/006/0052/0058

CIRC ACCESSION NO--AP0133068

UNCLASSIFIED

2/2 019 UNCLASSIFIED

CIRC ACCESSION NO--AP0133068 PROCESSING DATE--13NOV70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE BROMSULFALEIN TEST WAS USED FOR STUDY OF THE EXCRETORY FUNCTION OF THE LIVER IN 102 PATIENTS SUFFERING FROM CHRONIC HEPATITIS AND CIRRHOSIS OF THE LIVER. THE TEST PROVED TO BE POSITIVE IN 92 CASES. THE INDICES OF THE BROMSULFALEIN TEST FLUCTUATED FROM 6.8 TO 73.5 PERCENT. THE BROMSULFALEIN TEST IS HIGHLY SENSITIVE AND SPECIFIC; IT REFLECTS THE MARKEDNESS OF AFFECTION OF THE FUNCTIONAL CAPACITY OF THE LIVER. THERE EXISTS A CLOSE CORRELATIVE DEPENDENCE BETWEEN INDICES OF THE BROMSULFALEIN TEST, LEVEL OF PROCONVERTIN AND DEGREE OF DYSPROTEINEMIA IN PATIENTS WITH CIRRHOSIS OF THE LIVER. THERE IS A CERTAIN PARALLELISM BETWEEN CHANGES OF THE BROMSULFALEIN TEST, CONTENT OF BILIRUBIN, ERYTHROCYTE MACROCYTOSIS, AND TO A LESSER DEGREE, OF THE MERCURIC CHLORIDE TEST. A POSITIVE DYNAMICS OF THE BROMSULFALEIN TEST IN PATIENTS WITH CHRONIC HEPATITIS AND LIVER CIRRHOSIS WAS OFTEN COMBINED WITH AN IMPROVEMENT OF CLINICAL DATA AND A NUMBER OF FUNCTIONAL TESTS. FACILITY: GEMOTERAPEVTICHESKAYA KLINIKA TSENTRAL'NOGO INSTITUTA GEMATOLOGII I PERELIVANIYA KROVI MZ SSSR, MOSKVA.

UNCLASSIFIED

SHAROVAR, T. M.

Social Hygiene & Health

UDC: 616-08:362.11]-036.8

EFFECTIVENESS OF HEALTH MEASURES IN SANATORIUM-PROPHYLACTORIUMS FOR BLUE AND WHITE COLLAR EMPLOYEES WORKING UNDER DIFFERENT INDUSTRIAL CONDITIONS

[Article by T.M. Sharovar, All-Union Scientific Research Institute of Social Hygiene and Public Health Organization imeni N.A. Semashko, Moscow, Sovetskoye zdravookhraneniye, Russian, no 11, 1972, published 6 May 1972, pp 17-22]

Sanitary-hygienic and industrial-occupational factors play a significant part in formation of morbidity involving temporary disability. The influence of working conditions on morbidity with temporary disability has been noted by several authors. Aside from sanitary and hygienic conditions, the organization of labor, work schedule, personnel turnover (N.I. Gavrilov; V.A. Merkulyakova; A.Ye. Shakhgel'dyants, and others), and other factors also influence the morbidity rate. L.K. Khotsyanov, I.D. Kvasnov, M.M. Tarnopol'skaya, I.G. Fridlyand, and others mention a link between working conditions and indices of overall morbidity and morbidity involving temporary disability.

Improvement of working conditions, mechanization and automation of the quantity of medical care help lower morbidity among the workers. In the overall system of therapeutic and health-improving measures directed toward strengthening health and lowering morbidity among working people, sanatorium-prophylactoriums play a large part. The decrease in absence due to temporary disability among individuals who were treated in such health institutions helps augment production and thus prevents losses for the enterprise. The prevented losses are considerably greater than the expense for this form of health care.

Our problem was to determine the correlation between the results of care in prophylactoriums and several industrial and occupational factors. For this purpose we made a study of morbidity among blue and white collar workers treated at the prophylactoriums of two large enterprises: Lyublin Casting Machine Plant (LLMZ) and Kolomenskiy Locomotive Building Plant (KMZ) over a two year period (12 months before and after such health care) as related to employment in a specific shop, occupation, tenure, etc.

1193 57875

2 Jan 73

SHAROVAR T. M.

JPRS 55574
29 Nov 72

UDC: 614:362.13

THE ROLE OF DISEASE PREVENTION SANATORIUMS IN IMPROVING HEALTH AND LOWERING MORBIDITY AMONG BLUE AND WHITE COLLAR WORKERS

[Article by T.M. Sharovar, All-Union Scientific Research Institute of Social Hygiene and Public Health Organization imeni N.A. Semashko, Moscow; Moscow, Sovetskoye Zdravookhraneniye, Russian, No 2, 1972, submitted 14 September 1971, pp 27-31]

Among the different types of therapeutic and prophylactic institutions serving working people, sanatorium-prophylactoriums are important. They render a wide set of services to prevent disease. The number of such sanatorium-prophylactoriums (hereafter we shall designate them as prophylactoriums) is growing with each passing year. Their capacity has increased by 3.5 times in the last ten years. In 1970 alone, 1,143,000 people improved their health in prophylactoriums.

The importance of prophylactoriums (sanatoriums for disease prevention) in the matter of protecting the health of blue and white collar workers has been mentioned by a number of authors (M.S. Marshak et al.; N.K. Belyayeva and S.I. Bitkova; Ya.M. Grinberg et al., 1956; K.K. Bragina; N.Ya. Kazlyev; Ye.N. Firsayeva, 1961; I.A. Afanas'yev; N.P. Noytman; L.P. Sdobnov, and others). In the opinion of some authors there is considerable improvement and simply negligible improvement, others yet claim there is no improvement, while there are also authors who believe that there is deterioration. This is based on changes in weight, arterial pressure, hemoglobin level before and after a stay in prophylactoriums, changes in productivity of labor, and others. But the chief criteria of effectiveness are believed to be lower morbidity indices as related to temporary disability.

In the last few years, some researchers have considered the effectiveness of treatment in different therapeutic and prophylactic institutions from not only the medical but also economic point of view (N.A. Kucherin; I.D. Bogatyrev et al.; Yu.Ye. Danilov; S.V. Stroganov, and others). However, when assessing the indices of effectiveness of therapeutic and prophylactic institutions the change in total morbidity rate (according to frequency of visits) and in visits made by the improved group are not taken into consideration.

SHAROVATOV, GENNADIY

MAPS OF THE OCEAN FLOOR

15 Feb 73

V. Vladimirov

When you see these pictures for the first time, they look like a landscape of a strange planet: cones of dead volcanoes, deep oval-shaped craters, piled-up rocks of most various shapes. However, Gennady Sharovatov, laboratory head at the Novosibirsk Research Institute of Applied Geodesy, explains that these are closeup pictures of the ocean floor taken from the research ship Sergei Vavilov. Sharovatov indicates "trenches" dug by some inhabitants of the ocean depths, hardened lava and other features.

The stereoscopic pictures have been shot three kilometres below the surface in pitch darkness by an automatic camera and a flash lamp controlled from the ship. Now experts have to decode them in order to compile maps and contours of the ocean floor.

The more man exploits the ocean, the more facts and details he needs to know about it. Already today settlements are being built off the coast, and in the Caspian Sea thick network of pipelines has been laid on the sea bed in some places. In two or three years the north seas' shelves will be developed, and geologists of Tyumen today have to explore the sea bed for oil and gas. The pictures I have seen also showed rocks that turned out to be iron and manganese concretions with 70-per-cent pure metal content. Exploitation of these deposits will require no ore dressing mills and access roads. But one has to know whether ore formation processes have ended or still go on.

In a word, the demand for large-scale maps is growing, which is why the Novosibirsk Institute is developing methods of underwater large-scale stereophotogrammetric survey and means of underwater stereophotography.

To check out a new technique for processing photo information an unusual experiment was staged in the Black Sea. A big metal frame painted in different colours was submerged to great depths and pictures were taken of it. It turned out that the new technique made it possible to determine the size of various parts of the frame with an accuracy of up to a few millimetres.

Some problems of processing information were altogether new and the Novosibirsk researchers successfully coped with them. Photo information is fed into a computer which either produces a digital model of underwater objects or directly supplies results in graphic form taking into account a whole range of factors which affect the index of light refraction in water and change the overall picture: saltiness of water, its

APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R002202910011-3"

1/2 023 UNCLASSIFIED PROCESSING DATE--30OCT70

TITLE--SPECIFIC HEAT OF TETRAAMMINEPALLADIUM CHLORIDE AND ITS HYDRATE -U-

AUTHOR-(02)-SOKOLOV, V.A., SHARPATAYA, G.A.

COUNTRY OF INFO--USSR

SOURCE--ZH. FIZ. KHIM. 1970, 44(3), 603-8

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--HEAT CAPACITY, PALLADIUM COMPOUND, COMPLEX COMPOUND, VIBRATION FREQUENCY, AMMONIA, MONOMER, DIMERIZATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--2000/1634 STEP NO--UR/0076/70/044/003/0603/0608

CIRC ACCESSION NO--AP0125256

UNCLASSIFIED

2/2 023 UNCLASSIFIED PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0125256

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A DETN. OF THE HEAT CAPACITY OF (PD(NH SUB3) SUB4)CL SUB2 AT 100-300DEGREESK IS PRESENTED. FREQUENCIES OF SKELETAL VIBRATIONS OF THE COMPLEX ION HAVE BEEN CALCD. THE POTENTIAL BARRIER OF THE HINDERED VIBRATION OF NH SUB3 GROUP OF THE COMPLEX ION ARGUND THE TRIGONAL AXIS IS ESTD. (1000 CAL-MOLE). CONTRIBUTION TO THE SP. HEAT OF THE (PD(NH SUB3) SUB4)CL SUB2 HYDRATE OWING TO THE MOTION OF H SUB2 O MOLS. IN THE STRUCTURAL CHANNELS HAS BEEN ESTD. IT IS CONCLUDED THAT MOLS. OF ZEOLITIC WATER CAN ENTER INTO THE LATTICE IN THE FORM OF MONOMERS AND DIMERS. FACILITY: INST. OBSHCH. NEORG. KHIM. IM. KURNAKOVA, MOSCOW, USSR.

UNCLASSIFIED

ZAKATOVA, N. V., and SHARPATYY, V. A., Institute of Chemical Physics
Academy of Sciences USSR Moscow

"Mechanism of the Radiolysis of Aqueous Solutions of DNA"

Moscow, Doklady Akademii Nauk SSSR, Vol 200, No 6, Oct 71, pp 1378-1381

Abstract: The basic processes of radiolytic breakdown of DNA in aqueous solutions are: depolymerization and decoding. This study was aimed at determining whether these processes could occur simultaneously and which radiolysis products are causing them. The radiolysis products were plotted as functions of the dose in DNA solutions of varying concentrations. The concentration functions of [NH_3] and [malonodialdehyde] (MDA) are very similar, following a plateau in the initial concentration range. The yield of deamination at high concentrations of DNA depends on the amount of dissolved oxygen. Studying the postradiational effects in DNA solutions, it was determined that MDA forms during the breakdown of cytosine and thymine hydroperoxides. In dilute DNA solutions the main input into the formation of MDA is due to the reaction of radiolysis products with 2-desoxyribose radicals bound to purine bases. In general about 50% of the deamination process is due to the OH, the other 50% are accounted for by O_2^-. In the course of this it was established that radioprotectors compete effectively for OH' with the biopolymer molecules.
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UDC 541.15+539.199+538.113

GOL'DIN, S. I., SHARPATYY, V. A., and MARKEVICH, S. V., Institute of Physico-Organic Chemistry, Belorussian Academy of Sciences, Minsk, and Institute of Chemical Physics, USSR Academy of Sciences, Moscow

"Formation and Conversion of Radicals in Glucose Polymers during γ-Radiolysis"

Moscow, Doklady Akademii Nauk SSSR, Vol 201, No 1, Nov-Dec 1971, pp 133-136

Abstract: The epr method is used to study the nature of radicals formed during radiolysis (77° and 300°K) of dry samples of native dextrane, polyglucin and glucose, both undeuterated and deuterated (70-80% in polyglucin, 80-90% in glucose), in the hydroxyl groups.

The majority of radicals formed during radiolysis of glucose and its high polymers were identical; the basic differences were associated with structural peculiarities of the polymers and the glucose, and with the presence of some water of crystallization.

Tables are given to show the characteristics of radicals identified by epr spectra; also data on the properties of radicals identified in glucose, where differences exist in comparison with those in polysaccharides. It

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GOL'DIN, S. I., et al., Doklady Akademii Nauk SSSR, Vol 201, No 1, Nov-Dec 1971, pp 133-136

is believed that the primary radicals are formed during cleavage of C--H and C—OH bonds.

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USSR

UDC 541.15+535.37

SULTANKHODZHAYEVA, M. N., and SHARPATYY, V. A., Institute of Chemical Physics, Academy of Sciences USSR, Moscow

"Radiothermoluminescence of 10 M KOH Solutions"

Moscow, Doklady Akademii Nauk SSSR, Vol 200, No 5, 1971, pp 1152-1155

Abstract: The low-temperature radiolysis of 10 M KOH in the presence of two compounds modeling fragments of nucleic acids, i.e., glucose and thymine, was studied on the basis of thermoluminescence that developed after the solutions had been irradiated in Ar at 77°K with gamma rays in the 0.25-14 Mrad dose range. Glucose and thymine function as acceptor of the oxidation and reduction products of H_2O radiolysis, respectively. Emission at 360-800 millimicrons of the irradiated KOH solution in the 100-185°K range, which varied in intensity depending on whether or not the dark-blue solution was bleached (light with $\lambda \geq 510$ millimicrons or that from an incandescent bulb was used for bleaching), showed two peaks, at 112°K (peak I) and 167°K (peak II), respectively. Peak I was increased by thymine. It was associated with the reaction $H^+ + e_{st} = H^*$ (st = stabilized) or $H + O^- = (OH^-)^*$, possibly accompanied by $H + H = H_2$. The process $H^+ + e \ldots O^- \rightarrow H + O^- \rightarrow (OH^-)^* \rightarrow HO^- + h\nu$ could be assumed, in which thymine and glucose acted as activator

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SULTANKHODZHAYEVA, M. N., and SHARPATYY, V. A., Doklady Akademii Nauk SSSR, Vol 200, No 5, 1971, pp 1152-1155

and deactivator, respectively. Peak II could be ascribed to recombination of electrons with K^+. It was reduced by glucose. A peak at 130-40°K, which developed in the emission of samples that had been bleached or irradiated with intense gamma-rays, was presumably due to recombination of K^+ with electrons formed from $e_2^=$.

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USSR K S UDC 547.455 2

KUDRYASHOV, L. I., LIVERTOVSKAYA, T. YA., VOZNESENSKAYA, S. V., KOVALEV, YU. I., SHARPATYY, V. A., and KOCHETKOV, N. K.

"Radiation Chemistry of Carbohydrates. XII. Effect of Structural Factors on Course of Radiolysis Processes of Aqueous Solutions of Methylglycosides"

Leningrad, Zhurnal Obshchey Khimii, Vol 40, No 5, May 70, pp 1133-1137

Abstract: The authors studied regularities reflecting the relationship between the structure of the glycoside molecule and processes occurring during and after irradiation of aqueous solutions. The objects of study chosen were α-methyl-D-glucopyranoside, β-methyl-L-arabinopyranoside and α-methyl-D-galactopyranoside. The radiation sources used were a Co-60 device and an electron accelerator for frozen solutions. The periodate oxidation method was used to determine the glycoside concentrations of the irradiated solutions. It was found that the stereochemistry of methylglycosides has a significant

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KUDRYASHOV, L. I., et al., Zhurnal Obshchey Khimii, Vol 40, No 5, May 70, pp 1133-1137

effect on their radiation resistance. There is practically no formation of free monosaccharides in the radiolysis of dilute aqueous solutions. The principal process in the radiolysis of α-methyl-D-galactopyranoside and β-methyl-L-arabinopyranoside is the formation of deoxy sugars. According to EPR measurements, the composition and ratio of radiolysis products depend on the structure of the initial molecules and the reactivity of the intermediate particles that form.

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1/2 016 UNCLASSIFIED PROCESSING DATE--20NOV70

TITLE--LOW TEMPERATURE RADIOLYSIS OF AQUEOUS SOLUTIONS OF DEOXYRIBONUCLEIC ACID -U-

AUTHOR-(04)-SHARPATYY, V.A., PRISTUPA, A.I., PRIKHODKO, I.N., SULTANKHODZHAYEVA, M.N.

COUNTRY OF INFO--USSR

SOURCE--IZV. AKAD. NAUK SSSR. SER. KHIM. 1970, (3), 702-5

DATE PUBLISHED--------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--DNA, AQUEOUS SOLUTION, RADIOLYSIS, LOW TEMPERATURE EFFECT, EPR SPECTRUM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3004/0477

STEP NO--UR/0062/70/000/003/0702/0705

CIRC ACCESSION NO--AP0131116

UNCLASSIFIED

2/2 016 UNCLASSIFIED PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0131116

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. FROM EPR SPECTRA IT WAS SHOWN THAT RADIOLYSIS OF AQ. SOLNS. CONTG. DNA UNDER ALK. AND ACIDIC CONDITIONS RESULTS IN PRODUCTS THAT TAKE PART IN DECOMPN. OF DNA; ALSO IDENTIFIED WERE THE RADICALS OF A BIOPOLYMER THAT IS FORMED IN SUCH REACTIONS. AT 77DEGREESK DNA WAS SHOWN TO REACT WITH THE REDUCING COMPONENT OF THE WATER RADIOLYSIS MOIETY. THE RADIOCHEM. YIELDS OF RADICALS FROM AQ. SOLNS. OF DNA AND GLUCOSE WERE TABULATED, OVER A RANGE OF CONCNS. IT WAS SHOWN THAT THE REDUCING COMPONENT OF RADIOLYSIS (AQ. ELECTRONS) BEHAVES DIFFERENTLY IN RESPECT TO DNA OR GLUCOSE IN THE SOLN. THE LATER TENDS TO STABILIZE THE ELECTRON IN THE MATRIX AND IN ITS REACTIONS, WHILE THE H ATOMS ALONG WITH ADDN. TO DOUBLE BONDS IN THE THYMINE BASE MAY ALSO REACT AT 77DEGREESK WITH THE SUGAR FRAGMENT OF DNA IN A REACTION OF THE TYPE: RH PLUS H YIELDS R PLUS H SUB2; I.E. SIMILAR TO REACTION OF HO RADICAL AND CARBOHYDRATE MOL. IN FROZEN, AQ. SOLN. AT HIGHER TEMPS. THAN 77DEGREESK. FACILITY: INST. KHIM. FIZ., MOSCOW, USSR.

UNCLASSIFIED

1/2 040 UNCLASSIFIED PROCESSING DATE--090CT70

TITLE--FORMATION AND TRANSFORMATION OF RADICALS IN MYOINOSITOL UNDER THE INFLUENCE OF GAMMA RADIATION -U-

AUTHOR-(05)-NIKITIN, I.V., SHARPATYI, V.A., KUDRYASHOV, L.I., KOCHETKOV, N.K., EMANUEL, N.M.

COUNTRY OF INFO--USSR

SOURCE--DOKL. AKAD. NAUK SSSR 1970, 190(3), 635-8

DATE PUBLISHED--------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES, CHEMISTRY, NUCLEAR SCIENCE AND TECHNOLOGY

TOPIC TAGS--FREE RADICAL, CYCLOHEXANE, HYDROXYL RADICAL, EPR SPECTRUM, GAMMA RADIATION, RADIATION EFFECT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1992/2024 STEP NO--UR/0020/70/190/003/0635/0638

CIRC ACCESSION NO--AT0112979

UNCLASSIFIED

2/2 040 UNCLASSIFIED

CIRC ACCESSION NO--AT0112979 PROCESSING DATE--090CT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE RADICALS FORMED BY EXPOSURE OF HYD INOSITOL TO GAMMA RADIATION WERE CHARACTERIZED BY THEIR EPR SPECTRA AND THE SPECTRAL DATA WERE REPORTED IN DETAIL. THE RADICALS WERE PRODUCED AT 77DEGREESK IN DRY AND HYDRATED MODES OF INOSITOL. THE EXISTENCE OF THE STABILIZED ELECTRON WAS EVIDENT FROM DEVELOPMENT OF COLOR IN THE SPECIMENS CONTG. H SUB2 O AND FROM THE FORM OF THE EPR SPECTRA. FACILITY: INST. ORG. KHIM. IM. ZELINSKOGO, MOSCOW, USSR.

UNCLASSIFIED

1/2 015 UNCLASSIFIED PROCESSING DATE--11SEP70

TITLE--LOW TEMPERATURE RADIOLYSIS OF AQUEOUS ALKALINE SOLUTIONS -U-

AUTHOR--PRISTUPA, A.I., PRIKHIDKO, I.N., SHARPATYI, V.A.

COUNTRY OF INFO--USSR

S

SOURCE--IZV. AKAD. NAUK SSSR, SER. KHIM.; NO. 2, 488-91 (FEB 1970)

DATE PUBLISHED----FEB70

SUBJECT AREAS--CHEMISTRY, NUCLEAR SCIENCE AND TECHNOLOGY

TOPIC TAGS--RADIOLYSIS, AQUEOUS SOLUTION, POTASSIUM COMPOUND, HYDROXIDE, EPR, GAMMA RADIATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1989/0530 STEP NO--UR/0062/70/000/002/0488/0491

CIRC ACCESSION NO--AP0107135

UNCLASSIFIED

2/2 015 UNCLASSIFIED

CIRC ACCESSION NO--AP0107135 PROCESSING DATE--11SEP70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE RADIOCHEMICAL PROPERTIES OF VITREOUS KOH SOLUTIONS (10 M) WERE STUDIED AT 77DEGREESK OVER A WIDE RANGE OF DOSES. THE EPR METHOD WAS USED TO DETERMINE THE EFFECTS OF PRIME60 CO GAMMA RAYS ON THE ACCUMULATION AND YIELD OF E SUBSTABILIZED, O PRIME NEGATIVE, AND H IN KOH SOLUTIONS AT 8.3 TIMES 10 PRIME3 TO 2.2 TIMES 10 PRIME7 RAD DOSES. STEP: LINE CURVES WERE DEVELOPED FOR O PRIME NEGATIVE AND H ACCUMULATION AS A FUNCTION OF ABSORBED DOSES.

UNCLASSIFIED

USSR

UDC 539.67

POSTNIKOV, V. S., ZOLOTUKHIN, I. V., BURMISTROV, V. N., and SHARSHAKOV, I. M.

"Internal Friction Governed by Relaxation on Twinning Boundaries in Indium + 10% Tallium Alloy"

Sb. "Vnutrenneye treniye v metallicheskikh materialakh" (Internal Friction in Metallic Materials), Moscow, Izd-vo "Nauka," 1970, pp 152-156

Abstract: It is shown that single crystal samples of In-Tl alloys with a face-centered tetragonal lattice have high damping properties. Single crystals in which the twinning direction is normal to the sample axis have the highest damping value. The observed peaks on internal friction temperature dependence characteristics near the liquid nitrogen temperature are governed by a relaxation along the twinning boundaries. The internal friction peaks at higher temperatures are related to Zener relaxation and diffusion of excessive tallium atoms from packing imperfections into the matrix. The magnitudes of peaks depends substantially on single crystal orientation. 4 figures, 8 references.

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APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R002202910011-3"

USSR

UDC 539.67

POSTNIKOV, V. S., BELKO, V. N., and SHARSHAKOV, I. M.

"Magnetomechanical Damping in Cobalt-Nickel Alloys"

Sb. "Vnutrenneye treniye v metallicheskikh materialakh" (Internal Friction in Metallic Materials), Moscow, Izd-vo "Nauka," 1970, pp 191-198

Abstract: A study is made of the amplitude-dependent internal friction of nickel, cobalt, and cobalt-nickel alloys in a wide range of temperatures and deformation amplitudes. It is shown that the irreversible displacement of domain boundaries contributes mainly to damping. However, the contribution magnitude depends substantially on alloy chrystalline structures, although alloys with FCC structure have a substantially larger damping value than alloys with a hexagonal close-packed structure. Phase hardening has a strong influence on damping. Prolonged annealing at a temperature close to phase transformation improves damping in alloys with a hexagonal close-packed structure. A peak appearing on internal friction characteristics of alloys with a FCC structure is explained by two simultaneous processes, i.e., magneto-mechanical hysteresis and micro-plastic deformation. 8 figures, 9 references.

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USSR

UDC 539.4.019.3

BELEN'KIY, V. S., POSTNIKOV, V. S., and SHARSHAKOV, I. M.,
Voronezh

"Low-Temperature Internal Friction of Magnesium and Its Alloys With Zirconium and Manganese"

Moscow, Fizika i Khimiya Obrabotki Materialov, No 2, Mar-Apr 71, pp 162-165

Abstract: The internal friction of single crystals and polycrystals of magnesium and the alloys Mg-0.83Mn, Mg-0.35Zr, and Mg-0.52%Zr were studied in the temperature range 83-298°K. The Q(T) curves of the deformed crystals show three peaks corresponding to temperatures of 150-188 and 250-260°K. The activation energy of the first two peaks is 0.31 and 0.47eV, respectively. It is assumed that these peaks results from the interaction of point defects with dislocations. The activation energy of the peak at 250-260°K is 1.32eV; the nature of this peak is related to relaxation of stresses at twinning boundaries.

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USSR

UDC 539.67

YEVSYUKOV, V. A., ZOLOTUKHIN, I. V., LEBEDINSKIY, V. S., PESIN, M. S., POSTNIKOV, V. S., and SHAPSHAKOV, I. M.

"Internal Friction in Phase Transformation in TiNi Intermetallic Compound"

Sb. "Vnutrenneye treniye v metallicheskikh materialakh" (Internal Friction in Metallic Materials), Moscow, Izd-vo "Nauka," 1970, pp 163-165

Abstract: The nature of the phase transformation in an equiatomic TiNi compound is studied by methods of internal friction, electrical resistance, and dilatometric analysis. The presence of some peaks on the internal friction temperature dependence curve is reported and their features are discussed. The energies of the activation processes are determined. It is assumed that the internal friction peak at 16°C is governed by the duffusion-free phase transformation. Data on internal friction, electrical resistance, and linear characteristics coincide well and confirm the assumed nature of the processes. 3 figures, 6 references.

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USSR

UDC 539.4.019.3

POSTNIKOV, V. S., SHARSHAKOV, I. M., and KOMAROV, V. G., Voronezh

"Elastic Properties of Single Crystals of Cu-Al-Ni Alloys"

Moscow, Fizika i Khimiya Obrabotki Materialov, No 1, Jan-Feb 72, pp 98-102

Abstract: A study was made of the microstructural changes in single crystals of the Cu-Al-Ni alloy in the process of deformation. The alloy was grown by the Bridgeman method in containers of spectrally pure graphite in an argon atmosphere. The high elasticity level of β_1 -single crystals of Cu-Al-Ni alloys is dependent on the $\beta_1 \rightleftarrows \gamma'$ -transformation in the deformation process in a wide range of temperatures and stresses. The deformation in γ' -crystals is realized by means of twinning, which appears to be elastic by a certain orientation of γ'-crystals. The correlation of the investigation results with data of amplitude-dependent internal frictions of β_1 - and γ'-phase is discussed by reference to diagrams. The internal friction level in the temperature region of the γ'-phase is considerably higher than in the β_1-phase region, which is explained by the motion of twin crystal boundaries. In the temperature range of the β_1-phase occurrence a dissipation of the oscillation energy is almost not observed, since the

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USSR

POSTNIKOV, V. S., et al., Fizika i Khimiya Obrabotki Materialov, No 1, Jan-Feb 72, pp 98-102

action of outer shearing stresses causes the produced elastic martensite crystals to disappear. Three illustrations, seven bibliographic references.

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USSR

UDC: 669.3:539.67

POSTNIKOV, V. S., SHARSHAKOV, I. M. and KOMAROV, V. G., Voronezh Polytechnic Institute

"Internal Friction in Single Crystals of Copper-Aluminum-Nickel Alloys"

Sverdlovsk, Fizika metallov i metallovedeniye, Vol 33, No 1, Jan 72, pp 222-224

Abstract: The purpose of this paper was to analyze the behavior of internal friction during thermoelastic $\beta \rightleftarrows \gamma'$ martensite transformation as well as the to study the effect of deformation and quenching rate on certain kinetic characteristics of transformations in Cu-Al-Ni alloys. Use was made of specimens grown by the Bridgeman method in containers from spectrally pure graphite in an argon atmosphere. It appears that the temperature position of the peak of the internal friction phase depends on the quenching rate and tempering time at 200-300°C. A decrease of the quenching rate is followed by peak displacement toward higher temperatures, i.e., temperature displacement at the beginning of both direct and reverse

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USSR

POSTNIKOV, V. S., et al, Fizika metallov i metallovedeniye, Vol 33, No 1, Jan 72, pp 222-224

transformations. At a cooling rate of 2-3 deg/sec, the martensite transformation is inhibited. Metallographic analysis indicates the emergence of various quenching-generated structures due to changes in the cooling rates. A increase in the order of magnitude may lead to marked changes in transformation temperatures. (2 illustrations, 8 bibliographic references).

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USSR

UDC 539.4.019.3

BELEN'KIY, V. S., POSTNIKOV, V. S., and SHARSHAKOV, I. M., Voronezh

"Low-Temperature Internal Friction of Magnesium and Its Alloys With Zirconium and Manganese"

Moscow, Fizika i Khimiya Obrabotki Materialov, No 2, Mar-Apr 71, pp 162-165

Abstract: The internal friction of single crystals and polycrystals of magnesium and the alloys Mg-0.83Mn, Mg-0.35Zr, and Mg-0.52%Zr were studied in the temperature range 83-298°K. The Q(T) curves of the deformed crystals show three peaks corresponding to temperatures of 150-188 and 250-260°K. The activation energy of the first two peaks is 0.31 and 0.47eV, respectively. It is assumed that these peaks results from the interaction of point defects with dislocations. The activation energy of the peak at 250-260°K is 1.32eV; the nature of this peak is related to relaxation of stresses at twinning boundaries.

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1/2 029 UNCLASSIFIED PROCESSING DATE--20NOV70

TITLE--PHASE TRANSFORMATIONS IN THE INTERMETALLIC COMPOUND TINI -U-

AUTHOR-(05)-PLSTNIKOV, V.S., LEBEDINSKIY, V.S., YEVSYUKOV, V.A., SHARSHAKOV, I.M., PESIN, M.S.

CCUNTRY OF INFO--USSR

SOURCE--FIZIKA METALLOV I METALLOVEDENIE, VOL. 29, FEB. 1970, P. 364-369

DATE PUBLISHED--------70

SUBJECT AREAS--MATERIALS, CHEMISTRY

TOPIC TAGS--ALLOY PHASE TRANSFORMATION, BIBLIOGRAPHY, METAL INTERNAL FRICTION, TITANIUM ALLOY, NICKEL, INTERMETALLIC COMPOUND, DILATOMETRIC ANALYSIS, RESISTIVITY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1995/0895 STEP NO--UR/0126/70/029/000/0364/0369

CIRC ACCESSION NO--AP0116405

UNCLASSIFIED

2/2 029 UNCLASSIFIED

CIRC ACCESSION NO--AP0115405 PROCESSING DATE--20NOV70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. STUDY OF PHASE TRANSFORMATIONS IN THE ALLOY TINI WITH EQUIATOMIC COMPOSITION, USING METHODS OF INTERNAL FRICTION, ELECTRICAL RESISTIVITY, AND DILATOMETRY. IT IS SUGGESTED THAT THE TRANSFORMATION AT TEMPERATURES RANGING FROM 50 TO PLUS 80 C IS OF A DIFFUSIONLESS TYPE AND IS CHARACTERIZED BY SMALL TEMPERATURE HYSTERESIS. A PHASE TRANSFORMATION OF AN ORDER DISORDER TYPE WAS DETECTED AT A TEMPERATURE OF 625 C. FACILITY: VORONEZHSKII POLITEKHNICHESKII INSTITUT, VORONEZH, USSR.

UNCLASSIFIED

1/2 018 UNCLASSIFIED PROCESSING DATE--04DEC70

TITLE--PHASE DIAGRAM OF A P,NITROPHENOL M AMINOPHENOL BETA NAPHTHYLAMINE TERNARY SYSTEM -U-

AUTHOR-(02)-SHARSHAKOVA, L.N., ZHURAVLEV, YE.F.

COUNTRY OF INFO--USSR

SOURCE--ZH. OBSHCH. KHIM. 1970, 40(4), 727-30

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--PHASE DIAGRAM, ORGANIC NITRO COMPOUND, PHENOL, AMINE, ORGANIC COMPLEX COMPOUND

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3006/0864 STEP NO--UR/0079/70/040/004/0727/0730

CIRC ACCESSION NO--AP0134593

UNCLASSIFIED

2/2 018 UNCLASSIFIED

CIRC ACCESSION NO--AP0134593 PROCESSING DATE--04DEC70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. PHASE DIAGRAMS ARE PRESENTED FOR SECTIONS OF THE TERNARY SYSTEM. THE FOLLOWING INVARIANT POINTS ARE REPORTED (TEMP., PERCENT 2 C SUB10 H SUB7 NH SUB2, AND PERCENT M H SUB2 NC SUB6 H SUB4 OH GIVEN): (1) 60DEGREES, 56.5, 24; 51DEGREES, 45, 21; 58DEGREES, 37, 32.5; 54DEGREES, 20, 37; 45DEGREES, 21.5, 21; AND 48DEGREES, 26PERCENT 16.5PERCENT. A TERNARY 1:1:1 COMPLEX EXIST IN THE SYSTEM. FACILITY: VORONEZH. POLITEKH. INFT., VORONEZH, USSR.

UNCLASSIFIED

1/2 011 UNCLASSIFIED PROCESSING DATE--20NOV70

TITLE--PHASE DIAGRAM OF THE UREA HYDROQUINONE TRICHLORO ACETIC ACID SYSTEM -U-

AUTHOR-(02)-SHARSHAKOVA, L.N., ZHURAVLEV, YE.F.

COUNTRY OF INFO--USSR

SOURCE--ZH. OBSHCH. KHIM. 1970, 40(3), 515-16

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--PHASE DIAGRAM, UREA, HYDROQUINONE, ACETIC ACID, CHLORINATED ORGANIC COMPOUND

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3002/1118 STEP NO--UR/0079/70/040/003/0515/0516

CIRC ACCESSION NO--AP0126545

UNCLASSIFIED

2/2 011 UNCLASSIFIED

CIRC ACCESSION NO--AP0128545 PROCESSING DATE--20NOV70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE PHASE DIAGRAM OF THIS SYSTEM CONTAINS REGIONS OF FOLLOWING COMPDS.: OC(NH SUB2) SUB2.CCL SUB3, CO SUB2 H, OC(NH SUB2) SUB2.2CCL SUB3 CO SUB2 H, AND OC(NH SUB2) SUB2.P,C SUB6 H SUB4(OH) SUB2 WHICH MEET AT 4 INVARIANT POINTS: (1) AT 12.5PERCENT UREA AND 8PERCENT HYDROQUINONE, M. 30DEGREES; (2) 17PERCENT UREA AND 12.5PERCENT HYDROQUINONE, M. 47DEGREES; (3) 25PERCENT UREA AND 14.5PERCENT HYDROQUINONE, M. 62DEGREES; AND (4) 36PERCENT UREA AND 10PERCENT HYDROQUINONE, M. 55DEGREES. NO TERNARY COMPLEX WAS OBSERVED.

FACILITY: VORONEZH. POLITEKH. INST., VORONEZH, USSR.

UNCLASSIFIED

1/2 024 UNCLASSIFIED PROCESSING DATE--30OCT70

TITLE--HYGIENIC ASSESSMENT OF PUPILS' POSTURE DURING LESSONS -U-

AUTHOR-(02)-MIKHAYLOVA, L.V., SHARSHATKINA, G.A.

CCUNTRY OF INFO--USSR

SOURCE--GIGIYENA I SANITARIYA, 1970, NR 6, PP 34-37

DATE PUBLISHED--------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--PEDIATRICS, POSTURE, PUBLIC HEALTH

CCNTROL MARKING--NO RESTRICTIONS

DUCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3001/0918 STEP NO--UR/0240/70/000/006/0034/0037

CIRC ACCESSICN NO--AP0126577

UNCLASSIFIED

2/2 024 UNCLASSIFIED PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0126577

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. AS THE RESULT OF STUDYING THE EFFECT OF VARIOUS POSTURES ON THE DYNAMICS OF CERTAIN PHYSIOLOGICAL FUNCTIONS IN THE COURSE OF LESSONS AND FATIGUE OF THE PUPILS, THE AUTHORS FOUND THE POSTURE WITH A SLIGHT FORWARD INCLINATION TO BE MOST FAVORABLE. IN THIS POSITION THE CENTRE OF GRAVITY OF THE BODY IS WITHIN THE LIMITS OF SUPPORT, THERE IS NO SIGNIFICANT COMPRESSION OF THE INTERNAL ORGANS AND LARGE VESSELS, THE DISTANCE BETWEEN THE TABLE SURFACE AND THE EYES CORRESPONDS TO THE HYGIENIC RECOMMENDATIONS. BESIDES, THE POSTURE IS QUITE STABLE AND THE RESULTING PHYSIOLOGICAL TREMORS ARE OF A SMALL AMPLITUDE. FACILITY: INSTITUT GIGIYENY DETEY; POORCSTKOV MINISTERSTVA ZDRAVOOKHRANENIYA SSSR, MOSKVA.

UNCLASSIFIED

BIOLOGY

Agriculture

USSR

UDC 595.786:577.95

GEYSPITS, K. F., PENYAZ', M. I., and SHASHENKOVA, D. Kh., Biological Institute, Leningrad State University

"Photoperiod and Temperature as Factors in the Development of the Moth Agrostis segetum (Lepidoptera, Noctuidae)"

Leningrad, Zoologicheskiy Zhurnal, No 11, 1971, pp 1,674-1,685

Abstract: Experiments designed to elucidate the role of light and temperature in the development of two geographic populations of the turnip moth Agrostis segetum (from the North Caucasus and South Tadzhikistan) revealed the existence of two types of diapause, pronymphal and larval. Both types of dormancy are facultative in that they occur only when there are certain combinations of environmental factors. The pronymphal diapause is most pronounced when moderate temperatures are combined with short photoperiods, i.e., the factors characteristic of natural conditions preceding preparation for the winter. The larval diapause occurs when high temperatures are combined with long photoperiods. At this time the larvae feed less intensively and grow much more slowly, although they remain active. Feeding helps the larvae to maintain the water balance and thus adapt to summer heat and drought. The experimental findings are applied to the observations of other investigators on the behavior of Agrotis segetum under natural conditions.

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USSR

RASKOSHA, V. L., SHARSHENALIYEV, Zh.

"Simplified Algorithms for Restoration of a Quantized Gaussian Process"

Izv. AN KirgSSR [News of Academy of Sciences, KirgSSR], 1973, No 1, pp 13-17 (Translated from Referativnyy Zhurnal Kibernetika, No 6, 1973, Abstract No 6V188, by the authors).

Translation: Simplified algorithms for restoration of a time and level-quantized Gaussian random process are studied. Expressions are produced for the dispersions of errors and dependence of quantization step with respect to time and level is analyzed.

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USSR

UDC 62.504.1

RASKOSHA, V. L., and SHARSHENALIYEV, Zh.

"Optimal Quantization of the Trajectory of a Moving Body in a Control Problem:

Frunze, Izvestiya Akademii Nauk Kirgizskoy SSR, No 5, September-October 1971, pp 26-30

Abstract: In measurement of the angular coordinates of a moving body, in the tracking mode, by means of angle-measuring receivers used as angle quantizers, the question arises of determining the angular step of the quantizer. This article gives an example in a two-dimensional space for which the problem is formulated; the space is the x,y plane in which a point with a coordinate probability density of $p(x,y)$ moves erratically. The location of the point is to be found by the use of $(2m + 1)(2n + 1)$ sensors, in which each sensor controls a small square with one side of Δh. Locating the point in a square, the sensor for that square emits a signal. It is required to determine the optimal quantization step Δh for which information regarding the trajectory of the point is a maximum. The criterion of optimality of the choice of quantization step is the maximum of discrete information at the quantizer output. The authors are with the Moscow Power Institute.

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USSR

CHERNYSHENKO, I. S., SHARSHUKOV, G. K., Kiev, Moscow.

UDC 539.374

"Stressed State of a Spherical Shell with a Hole in the Case of Recurrent Static Elastic-Plastic Deformation"

Kiev, Prikladnaya Mekhanika, Vol IX, No 10, 1973, pp 12-17

Abstract: A theoretical-experimental study was made of the stress-strained state of a spherical shell with a round unreinforced hole in the elastic-plastic stage under recurrent static load. The theoretical solution was obtained on the basis of deformation theory of plasticity under variable loads, and the numerical values of the stresses and strains were found for shells made of AMg6M, V92Ts and D20 alloys taking into account the formation of secondary plastic flows in the process of stress relief. A study was made of the variation of the stresses and strains with an increase in the number of loading cycles. The results of the theoretical calculations are compared with the experimental data indicating a difference of no more than 5.8 percent.

The experimental studies show that the stabilization of the stressed state comes very quickly. After the seventh or eighth loading cycle the stresses remain constant and do not change from cycle to cycle. In shells with a hole in the presence of repeated lows the residual stresses and strains must be determined considering the physical nonlinearity during stress relief.

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SHARKOV O. I.

"Mathematical Models of the Metabolism of Blood Plasma Proteins"

Upr. i Inform. Protsessy v Zhivoy Pripode [Control and Information Processes in Living Nature -- Collection of Works], Moscow, Nauka Press, 1971, pp 270-272, (Translated from Referativnyy Zhurnal, Kibernetika, No 3, 1972, Abstract No 3 V591 by V. Mikheyev).

Translation: Mathematical models of the process of metabolism of labeled protein in the blood plasma are studied as processes of equalization of the concentration of dye injected in one of the connected vessels in a hydrodynamic system on the assumption of homogeneity of the distribution of dye in the outer vessels. The description of the process of change of concentration of dye in the central vessel is reduced to a homogeneous differential equation

$$\sum_{i=0}^{n} a_i x^{(i)}(t) = 0, \quad x^{(i)}(0) = x_i, \quad i = 0, 1, \ldots, n-1.$$

If this assumption is not used, this process is described by an integro-differential equation with distributed delay:

$$x'(t) = K_1 x(t) - K_2 \int_0^t x(t-\tau)\, dF(\tau).$$

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USSR

SHARSKOV, O. I., Upr. i Inform. Protsessy v Zhivoy Pripode , Moscow, Nauka Press, 1971, pp 270-272.

It is noted that in similar deterministic dynamic models of the process of metabolism, it is impossible to consider the specific features of the process of decomposition (catabolism) and transport of protein molecules. A model of the metabolism process is suggested, constructed on the basis of queueing theory, in which dissimilar processes of decomposition and transport of protein models are expressed in time units. In this model, the metabolic process is represented as a queueing process in a complex, two-phase system. The decomposition (catabolism) of protein is looked upon as a queueing process in a one-channel system with failures. The process of transport of protein models through the tissue of the organism is also looked upon as a queueing process in a system with a limited number of channels (when the number of requests is less than the number of servicing channels). Queueing in this case refers to the process of transition of a molecule from the bloodstream to the tissue and from the tissue back to the circulating plasma. In correspondence with the mathematical model, the mean number of protein molecules m decomposed in time t is calculated by the formula

$$m = \frac{\psi_p}{\psi_{p+1}} \mu t + \frac{1}{(1+\psi_p)^2} \left[1 - e^{-(1+\psi_p)\mu t}\right].$$

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USSR

SHARSKOV, O. I., Upr. i Inform. Protsessy v Zhivoy Pripode , Moscow, Nauka Press, 1971, pp 270-272.

where ψ_p is a parameter, characterizing the effectiveness of servicing in the system with input flow λ; μ is a parameter characterizing the intensity of the decomposition process, the mean number of requests in multichannel system $\overline{n}$ (t) is determined by the formula:

$$\overline{n}(t) = n_0 e^{-\mu' t} + \frac{\lambda}{\mu'}(1 - e^{-\mu' t}),$$

where μ' is a parameter determining the intensity of servicing in one channel of this system.

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USSR

UDC 8.74

CHIRKOV, M. K., and SHARYKOV, A. P.

"An Abbreviated Check-Sum Checking Method"

V sb. Metody vychisleniy (Computational Methods -- Collection of Works), vyp. 7, Leningrad, Leningrad University, 1971, pp 129-139 (from RZh-Matematika, No 5, May 72, Abstract No 5V511 by V. MIKHEYEV)

Translation: The following theorem is proved: If $X(n)$ is the total check sum of some array of n-digit binary numbers and $n = kq \geqslant 1$ where k, q are integers then, as a result of its q-convolution, $X(q)$ -- an abbreviated check sum of this array -- is obtained. The n-digit binary number $X(n)$, obtained by the addition of the numbers $X^{(i)}$ ($i = 1, 2, \ldots, m$ with cyclic carry from high-order to low-order digit), is said to be the check sum of the array $X^{(i)} = \sum_{j=1}^{n} 2^{j-1} x_i^{(i)}$, $x_j^{(i)} \in \{0,1\}$, $i = 1,2,\ldots,m$. The q-digit binary number $X(q)$, obtained by addition of the q-digit binary numbers $x_r^{(i)}$ ($r = 1,2,\ldots, k$ with cyclic carry from high-order to low-order digit), is said to be abbreviated check sum of this array of numbers. The article also considers the case of several arrays.

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USSR

CHIRKOV, M. K. and SHARTUKOV, A. P., Metody vychisleniy, vyp 7, 1971, pp 129-139

The abbreviated checking algorithm consists in the following: 1. Calculation of the abbreviated check sum of an array (or arrays) of numbers by feeding the digits of these numbers as consecutive groups with q digits in each group to the adder. 2. Inversion of the total check sum closing the array, and feeding the inverted check sum to the adder in groups of q digits each. 3. Check on correct receipt of the array of numbers by reference to the contents of the adder. This algorithm is illustrated with an example.

2/2

USSR

CHIRKOV, M. K., SHARTUKOV, A. P.

UDC: 8.74

"On an Abbreviated Check-Sum Method"

V sb. Metody vychisleniy (Methods of Computations--collection of works), vyp. 7, Leningrad, Leningrad University, 1971, pp 129-139 (from RZh-Kibernetika, No 5, May 72, Abstract No 5V511)

Translation: The following theorem is proved. If $X(n)$ is the complete check sum of any mass of n-place binary numbers and $n = kq \geq 1$, where k, q are integers, then as a result of the q-contraction of the sum we get $X(q)$ -- the abbreviated check sum of this mass of numbers. The check sum $(K\Sigma)$ of the mass $X^{(i)} = \sum_{j=1}^{n} 2^{j-1} x_j^{(i)}$, $x_j^{(i)} \in \{0,1\}$, $i = 1, 2, \ldots, m$, is the n-place binary number $X(n)$ obtained by adding the numbers $X^{(i)}$, $i = 1, 2, \ldots, m$, with end-around carry from the most significant to the least significant places. The abbreviated $K\Sigma$ of a given mass of numbers is the q-place binary number $X(q)$ obtained by adding the q-place binary numbers $X_r^{(i)}$, $r = 1, 2, \ldots, k$, with cyclic carry

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USSR

CHIRKOV, M. K., SHARTUKOV, A. P., Metody vychisleniy, vyp. 7, Leningrad, Leningrad University, 1971, pp 129-139

from the most significant to the least significant digits. The case of several number masses is also considered. The abbreviated check algorithm consists in the following. 1. Calculation of the abbreviated $K\Sigma$ of a mass (or masses) of numbers by feeding the digital places of these numbers to the adder in sequential groups of q places in each group. 2. Inversion of the complete $K\Sigma$ which closes the mass, and feeding the inverted $K\Sigma$ to the adder in groups of q places each. 3. Checking proper reception of the mas from the content of the adder. The algorithm is illustrated by an example. V. Mikheyev.

2/2

USSR

UDC 669.721.472

ZUYEV, N. M., IVANOV, A. B., VUKOLOV, V. V., GENKIN, Ya. N., SHARUNOVA, G. M., SVALOV, G. N.

"Development of a Continuous Technology for Production of Magnesium"

Tr. Vses. N-i. i Proyektn. In-ta. Alyumin., Magn. i Elektrodn. Prom-sti [Works of All-Union Scientific Research and Planning Institute of the Aluminum, Magnesium and Electrode Industry], 1970, No. 72, pp. 48-55. (Translated from Referativnyy Zhurnal Metallurgiya, No. 5, 1971, Abstract No. 5 G196 by the authors).

Translation: Results are presented from combined studies for the development of technology and equipment for production of Mg by electrolysis in a continuous system. This technology calls for a combination of the ordinary individually operating units into a single technological line with centralized charging of raw material, transmission of melt and Mg produced from unit to unit, and centralized removal of electrolysis products. The investigations established the influence of the continuous method of production of Mg on such technological indicators as the yield of Mg per unit current, the specific dc electric power consumption, the quantity of slime removed, etc; the specific features of operation of the equipment were determined. Testing of the technology and equipment for the continuous line was performed on laboratory, large-laboratory, and pilot-plant scales, demonstrating the possibility and promise of the new technological plan.

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USSR

UDC 669.721.472

ZUYEV, N. M., IVANOV, A. B., VUKOLOV, V. V., GENKIN, Ya. N., SHARUNOVA, G. M., SVALOV, G. N.

"Development of a Continuous Technology for Production of Magnesium"

Tr. Vses. N-i. i Proyektn. In-ta. Alyumin., Magn. i Elektrodn. Prom-sti [Works of All-Union Scientific Research and Planning Institute of the Aluminum, Magnesium and Electrode Industry], 1970, No. 72, pp. 48-55. (Translated from Referativnyy Zhurnal Metallurgiya, No. 5, 1971, Abstract No. 5 G196 by the authors).

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UDC 669.721.472(088.8)

USSR

ZUYEV, N. M., IVANOV, A. B., VUKOLOV, V. V., SHARUNOVA, G. M., SVALOV, G. N., IRTSGOV, N. N., SABUROV, V. F., SHCHELKONOGOV, A. A., GRUDOVSKIY, N. P., and KISELEV, A. V., All-Union Scientific Research and Design Institute of Aluminum, Magnesium, and Electrode Industry, Bereznikovskiy Titanium-Magnesium Combine

"Method of Cutting-Off the Electrolyte Supply of a Production Line Magnesium Electrolytic Reduction Cell"

USSR Author's Certificate No 260905, filed 21 Oct 68, published 5 May 70 (from RZh-Metallurgiya, No 11, Nov 70, Abstract No 11 G135 P)

Translation: A method is proposed for switching-off the electrolyte supply to a production line magnesium electrolytic reduction cell for subsequent diffusion of scum by increasing the temperature of the electrolyte and the concentration of magnesium chloride. To avert disruption of the operation of the production line electrolytic reduction cell at the input into the cathode cell of the electrolytic reduction cell, shields are placed, which separate the working space of the electrolytic reduction cell from the electrolyte flow in the distribution canal.

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1/2 030 UNCLASSIFIED PROCESSING DATE--23OCT70

TITLE--THERMAL CONDUCTIVITY OF PYROLYTIC ZIRCONIUM DIBORIDE AT HIGH TEMPERATURES -U-

AUTHOR-(03)-NESHPOR, V.S., FRIDLENDER, B.A., SHARUPIN, B.N.

COUNTRY OF INFO--USSR

SOURCE--INZH. FIZ. ZH. 1970, 18(3), 527-30

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY, MATERIALS

TOPIC TAGS--ZIRCONIUM BORIDE, THERMAL CONDUCTIVITY, CHEMICAL REDUCTION, REFRACTORY COMPOUND, POWDER METALLURGY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1997/0326 STEP NO--UR/0170/70/018/003/0527/0530

CIRC ACCESSION NO--AP0119313

UNCLASSIFIED

2/2 030 UNCLASSIFIED PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0119313

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE THERMAL DIFFUSIVITY ALPHA OF ZRB SUB2 LAYER (THICKNESS 0.3 MM), PREPD. BY THE CHEM. GAS PHASE REDN. OF ZR AND B HALIDES BY H IN VACUUM (10 PRIME NEGATIVE5 TORR) AT 1200DEGREES, WAS MEASURED AT 1500-2300DEGREES BY USING THE PHASE METHOD. THE VALUES OF ALPHA WERE USED FOR CALCG. THE THERMAL COND. LAMBDA WHICH DECREASED FROM 105 TO 95 W-M DEGREE AT 1500-2300DEGREES. THE DATA ARE COMPARED WITH LAMBDA VALUES OF SIMILAR TO 30 W-M DEGREE REPORTED FOR ZRB SUB2 SAMPLES PREPD. BY USING THE METHODS OF POWDER METALLURGY; THE REASONS FOR THESE DIFFERENCES ARE DISCUSSED.

UNCLASSIFIED

1/2 034 UNCLASSIFIED PROCESSING DATE--27NOV70
TITLE--INVESTIGATION OF THE DYNAMIC INTERMEDIATE STATE OF SUPERCONDUCTORS -U-
AUTHOR-(02)-SHARVIN, YU.V., LANDAU, I.L.

5

COUNTRY OF INFO--USSR

SOURCE--ZHURNAL EKSPERIMENTAL'NOY I TEORETICHESKOY FIZIKI, 1970, VOL 58, NR 6, PP 1943-1954
DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--SINGLE CRYSTAL, INDIUM, SUPERCONDUCTOR, FINE WIRE, ELECTRIC RESISTANCE, OSCILLATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--2000/2244 STEP NO--UR/0056/70/058/006/1943/1954

CIRC ACCESSION NO--AP0125822

UNCLASSIFIED

2/2 034 UNCLASSIFIED PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0125822

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE MOTION OF DOMAINS OF THE NORMAL AND SUPERCONDUCTING PHASES UNDER THE ACTION OF A DIRECT CURRENT (DYNAMIC INTERMEDIATE STATE) DISCOVERED PREVIOUSLY (PRIME10) IS STUDIED IN SINGLE CRYSTAL INDIUM SAMPLES BY OBSERVING OSCILLATIONS OF THE RESISTANCE OF THIN WIRES IN CONTACT WITH THE SAMPLE SURFACE. IT IS FOUND THAT MOVING LAMELLAR STRUCTURES POSSESS A SPATIAL PERIOD CLOSE TO THAT OF THE STATIC STRUCTURES. LAYERS ORIENTED BY AN EXTERNAL FIELD CAN MOVE AT VARIOUS ANGLES WITH RESPECT TO THE CURRENT DIRECTION. THE MEASURED VALUE OF THE VELOCITY SATISFIACTORILY GAGRES WITH THE PREDICTIONS OF THE THEORY (PRIME5, PRIME13). LAYERS PARALLEL TO THE CURRENT ARE DISPLACED WITH A VLEOCITY WHICH IS PROPORTIONAL TO THE RESISTANCE OF THE NORMAL PHASE AND INVERSELY PROPORTIONAL TO H SUBC. AT TEMPERATURES REMOTED FROM T SUBC THE VLEOCITY OF LAYERS PERPENDICULAR TO THE CURRENT IS PROPORTIONAL TO THE HALL CONSTANT AND CLOSE TO THE DRIFT VELOCITY OF THE CHARGE CARRIERS IN THE NORMAL PHASE. FACILITY: INSTITUT FIZICHESKIKH PROBLEM AN SSSR.

UNCLASSIFIED

USSR UDC 621.373.53(088.8)

MUSAYELYAN, S. A., MAZURENKO, I. V., SHARYAPOV, Sh. A., PAVLOV, V. G.

"A Relaxation Oscillator"

USSR Author's Certificate No 259141, Filed 7 Aug 68, Published 28 Apr 70 (from RZh-Radiotekhnika, No 10, Oct 70, Abstract No 10G170 P)

Translation: A relaxation oscillator is proposed with pulse bridge elements connected in the collector-base circuits of the transistors in the oscillator. To provide conditions for easy self-excitation of the oscillator and improve operational stability, a dynamic control circuit is connected between one of the poles of the power supply and the common bus. This control circuit is made up of a resistor and capacitor connected in series, the common point being connected to the bases of the transistors in the oscillator through auxiliary resistors, and to the collectors of these same transistors through semiconductor diodes. To improve the operational reliability of the oscillator on low frequencies, the additional resistors are connected to the capacitor thorugh an emitter follower.

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Acc. Nr.: AP0030987 S Ref. Code: UR 0219

PRIMARY SOURCE: Byulleten' Eksperimental'noy Biologii i Meditsiny, 1970, Vol 69, Nr 1, pp 40-43

COMPLEX INVESTIGATION OF THE GASTRO-INTESTINAL FUNCTION IN EXPERIMENTAL PLEUROPNEUMONIA

A. A. Sharygin
Kherson Agricultural Institute

Chronic tests conducted on 7 dogs demonstrated that in experimental pleuropneumonia disturbances of the secretory, motor and absorptive functions of the stomach and intestine occurred simultaneously. As a rule, secretory and motor disorders were more pronounced on the level of the stomach and deranged absorption -- on that of the intestines. Functional restoration of these organs supervened at a much later date after clinical recovery of the animal. Less protracted, however, were as a rule, motor disorders and more lingering — secretory disturbances of the stomach and intestines. Furthermore, these investigations helped to point up a number of other distinctive features, which it was difficult to reveal in a separate study into the functions of these organs.

2 MK

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REEL/FRAME
19691013

1/2 010 UNCLASSIFIED PROCESSING DATE--30OCT70

TITLE--EFFECT OF SINTERING PROCESS PARAMETERS ON PELLET QUALITY AS STUDIED BY A FACTOR METHOD UNDER INDUSTRIAL CONDITIONS -U-

AUTHOR-(05)-SHARYGIN, D.A., ONISHCHENKO, A.E., RYABOKON, F.A., NESTEROV, G.S., URIN, V.D.

COUNTRY OF INFO--USSR

SOURCE--STAL' 1970, 30(2), 105-7

DATE PUBLISHED--------70

SUBJECT AREAS--EARTH SCIENCES AND OCEANOGRAPHY

TOPIC TAGS--IRON OXIDE, SULFUR, DESULFURIZATION, INDUSTRIAL PRODUCTION, HIGH TEMPERATURE EFFECT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1994/1950 STEP NO--UR/0133/70/030/002/0105/0107

CIRC ACCESSION NO--AP0115758

UNCLASSIFIED

USSR

MOSKALENKO, V. N. and SHARYY, N. B. UDC 539.3:534.1

"The Natural Oscillations of a Cylindrical Shell Stiffened by Stringers With a Closed Deformable Contour"

Moscow, Mekhanika Tverdogo Tela, No 5, 1973, pp 62-65

Abstract: There is presented an exact solution of a problem of the natural oscillations of a cylindrical shell-fold, supported by stringers; the configuration of the cross section of the stringers is subject to deformation. As an example, a study is made of the frequencies and modes of the free oscillations of an end-supported shell, stiffened by one hundred thin-walled stringers.

A model of a shell-fold is used for studying the spectrum of the natural oscillations of cylindrical shells stiffened by a stringer ste. A method based upon the othoganalization of finite-difference equations is used for finding the frequencies and modes of the natural oscillations.

3 figures. 3 references.

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2/2 010 UNCLASSIFIED

CIRC ACCESSION NO--AP0115758 PROCESSING DATE--30OCT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE EFFECTS OF TEMP. OF THE PREHEATING ZONE, THICKNESS OF THE PELLET LAYER, TIME IN THE FIRING ZONE, AND SPECIFIC GAS CONSUMPTION ON THE CRUSHING STRENGTH OF PELLETS, FEO AND S CONTENTS, THE DEGREE OF SULFURIZATION, AND THE PROPORTION OF SMALLER THAN OR EQUAL TO 5-MM FINES WERE STATISTICALLY INVESTIGATED, USING PRODUCTION DATA. AFTER DETG. THE REGRESSION COEFFS., THE CORRESPONDING VALUE OF THE QUALITY PARAMETER, Y, CAN BE GIVEN AS Y EQUALS B SUBO PLUS PRIMEK SIGMA B SUBI X SUBI PLUS PRIMEK SIGMA SUBI SMALLER THAN J B SUBIJ X SUBI X SUBJ, WHERE B IS THE COEFF. OF REGRESSION AND X ARE INDEPENDENT VARIABLES. ANAL. OF THE DATA OBTAINED PERMITTED AN IMPROVEMENT OF PELLET PREPN. BY SELECTING CORRESPONDING TREATMENT PARAMETERS. PLANT RESULTS CHECKED THE ACCURACY OF THESE PREDICTIONS. FACILITY: SOKOLOVSKO SARBAISKII GORNOOBOGAT. KOMB., USSR.

USSR

UDC 621.385.632

BUDEY, A.G., LAVRUKOVICH, V.I., PIKULIK, V.G., SHAS', A.V.

"Experimental Study Of Some Methods Of Modulation Of TWT"

Vestn. Belorus. un-ta (Bulletin Of Bellorussian University), 1971, Ser.1, No 3, pp 61-66 (from RZh:Elektronika i yeye primeneniye, No 2, Feb 72, Abstract No 2A154)

Translation: Problems are considered of AM and FM low-noise traveling-wave tubes. The block diagram is presented of a unit for determination of the amplitudes, phase characteristics, and the characteristics of frequency conversion. The circuit is described of a sawtooth voltage generator based on drift transistors operating in an avalanche regime. Experimental and calculated data are compared. 8 ref. Summary.

1/1

SHASHIDOV, SH. SH.

JPRS 59308

6-73

5

X-3b. STUDY OF THE DISTRIBUTION OF ALLOYING ADMIXTURES IN EPITAXIAL LAYERS OF SILICON WITH THE APPLICATION OF RADIOACTIVE ANALYSIS

[Article by A. S. Lyutovich, V. P Pashkudenko, V. V. Kharchenko, E. Kh. Khodzhakhmedov, Sh. Sh. Shasaidov, Tashkent, Novosibirsk, III Simpozium po Protsessam Rosta i Sinteza Poluprovodnikovykh Kristallov i Plenok, Russian, 12-17 June 1972, p 129]

The idea of this experiment consisted in using alloying admixtures of various chemical nature and varying the crystallization conditions to estimate the contribution of the growth (segregation) effects and the diffusion processes to the final distribution of the admixtures. The epitaxial layers of silicon were obtained by the method of hydrogen reduction of $SiCl_4$ in a broad concentration range of $SiCl_4$ and alloying components. The alloying admixtures were introduced into the system in the form of chlorides from a separate source. In order to determine the distribution profiles of the admixture concentration, the procedure of layered neutron-activated analysis was used. It was demonstrated that the admixture profile in the investigated specimens is characterized by the presence of two sections: 1 — the section with uniform concentration distribution (the plateau), 2 — the section where the admixture concentration is nonuniform. Depending on the growth conditions, the ratio of the extent of these sections varies. By using the concentrations of the admixtures in the plateau region, we defined the effect of the crystallization temperature, the concentration of the $SiCl_4$, the PCl_3 and $SbCl_3$ in the gas phase on the alloying level of the epitaxial layer. In the case of low concentration of silicon tetrachloride in the gas phase in some samples the plateau is in practice absent. In a number of specimens, a sharp increase in admixture concentration is noted in the thin surface layer. This is observed especially frequently in specimens alloyed with antimony. The admixture profile in region 2 is described satisfactorily by the diffusion equations with effective coefficients the values of which under various crystallization conditions are essentially different. However, the purely diffusion mechanism of the formation of the profiles will be doubtful in connection with the fact that the metallurgical thickness of the epitaxial layers defined experimentally by the packing defects does not coincide with the thickness corresponding to a concentration of $N_0/2$ which was assumed in the calculations. The contribution of the diffusion and segregation phenomena to the distribution profile of the admixture in region 2 is discussed.

SHASAIDOV, SH. SH.

X-3a. EFFECT OF THE CRYSTALLIZATION CONDITIONS ON THE TRANSFER OF PHOSPHORUS AND ANTIMONY IMPURITIES FROM THE SUBSTRATES INTO THE EPITAXIAL LAYERS OF SILICON

[Article by A. S. Lyutovich, Z. Kh. Khodzhaahmedov, V. P. Tashkudenko, V. V. Kharchenko, M. R. Gerasuk, Sh. Sh. Shasaidov, Tashkent; Novosibirsk, III Simpozium po Protsessam Rosta i Sinteza Poluprovodnikovykh Kristallov i Plenok, Russian, 12-17 June 1972, p 128]

With the application of a layered radioactive analysis, studies were made of the distribution profiles of antimony and phosphorus in epitaxial layers of silicon as a function of the growth conditions. The epitaxial layers were obtained by the method of hydrogen reduction of silicon tetrachloride. The growth process temperature and the concentration of silicon tetrachloride were varied. The distribution profiles of the antimony and phosphorus can be satisfactorily described by diffusion equations with effective diffusion coefficients differing for different growth conditions. The relations between the diffusion coefficient in single crystals and found in our experiments depend essentially on the temperature, the growth rate and growth time.

With an increase in the growth rate the diffusion coefficients of both impurities increase for all crystallization temperatures (for the deposition temperature of 1,260°C, the variation takes place in the range of $5 \cdot 10^{-12}$ to $4 \cdot 10^{-10}$ cm^2/sec for phosphorus and $3 \cdot 10^{-12}$ to 10^{-10} cm^2/sec for antimony).

The values found for the diffusion coefficients as a function of the growth conditions of the layers can exceed the values known for single crystals. They can be equal and have smaller values.

1/2 045 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--PROVISION FOR CRISIS FREE, HEAT TRANSFER, REGIONS IN THE ACTIVE ZONE OF AN AMB REACTOR OF BLOCK NO. 1 OF THE BELOYARSK NUCLEAR POWER
AUTHOR-(03)-DOROSHCHUK, V.YE., NEVSKIY, V.P., SHASHARIN, G.A.

COUNTRY OF INFO--USSR

SOURCE--TEPLOENERGETIKA 1970, 17(3), 54-6

DATE PUBLISHED-------70

SUBJECT AREAS--NUCLEAR SCIENCE AND TECHNOLOGY, PHYSICS

TOPIC TAGS--HEAT TRANSFER, NUCLEAR POWER PLANT, NUCLEAR REACTOR/(U)AMB REACTOR

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1989/1903 STEP NO--UR/0096/70/017/003/0054/0056

CIRC ACCESSION NO--AP0108233
UNCLASSIFIED

2/2 045 UNCLASSIFIED PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0108233

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE OPERATION OF AN AMB REACTOR (BOILING WATER TYPE) AT 100 MW IS DISCUSSED PARTICULARLY WITH REGARD TO THE FORMATION OF UNSTABLE HEAT TRANSFER ZONES AT COOLANT WXIT MASS VAPOR CONTENTS (X) EQUALS 0.35. THIS MODE OF HEAT TRANSFER, REFERRED TO AS MODE II, IS CAUSED BY STRUCTURAL CHANGES IN THE 2-PHASE FLOW AND THE EVAPN. OF THE BOUNDARY LIQ. FILM. AN EQUATION IS DEVELOPED FOR THE CALCN. OF THE CRIT. VAPOR COMPN. (X PRIMEO SUBCR) AT WHICH MODE II HEAT TRANSFER OCCURS. THE X PRIMEO SUBCR IS INDEPENDENT OF THE HEAT FLOW (Q). CURVES OF X PRIMEO SUBCR SHOW IT TO BE A FUNCTION OF COOLANT FLOW RATES (RHO OMEGA) OF 750-2000 KG-M PRIME2-SEC AND COOLANT PRESSURES OF 50-190 ATM. INSTABILITY OF HEAT TRANSFER (MODE II) WAS ELIMINATED BY INCREASING THE COOLANT RHO OMEGA TO 3200-3300 KG-M PRIME2-SEC AND BY DECREASING ITS PRESSURE TO 135 ATM; AN X EQUALS 0.21-0.22 WAS ATTAINED WHICH IS SIGNIFICANTLY LOWER THAN THE X PRIMEO SUBCR OF 0.33 FOR THESE CONDITIONS.

UNCLASSIFIED

APPROVED FOR RELEASE: 07/20/2001 CIA-RDP86-00513R002202910011-3"

USSR

UDC 619:616.988.23:616.831.8:636

SHASHENKO, A. S., Scientific Associate, and KOVALEV, N. A., Candidate of Veterinary Sciences, Belorussian Scientific Research Institute of Veterinary Medicine

"The Distribution and Isolation of Virus in Rabies"

Moscow, Veterinariya, No 5, May 71, pp 42-44

Abstract: The distribution of the "fox" strain of street rabies virus in the organism of several domestic and wild animals was studied, as well as isolation of the strain in the environment at various stages of the infection process and after recovery. Dogs, cats, wild foxes, cattle, and sheep were experimentally infected with the virus strain isolated from a bull, which had been bitten by a rapid fox. The animals were observed for a period of 3.5-4 months. After intramuscular introduction of the virus, the disease broke out after an incubation period of 8-60 days and proceeded in its paralytic form. The early symptoms were loss of appetite and stimulation of lungs, which quickly changed to suppression and development of pareses and palsies. In sheep, dogs, and foxex, a rise in body temperature (by 0.5-1°C) was observed for 2-4 days preceding outbreak of the characteristic clinical symptoms of the disease and lasted for 2-6 days. No body temperature rise was noted in cats. At the end

USSR

SHASHENKO, A. S., Veterinariya, No 5, May 71, pp 42-44

of the disease, the body temperature of all animals dropped below the normal level. The disease lasted 1 to 9 days, depending on the type of animal. In 3 foxes infected by the alimentary route, the disease broke out after 15, 28, and 75 days of incubation and proceeded in severe form with a prolonged period of infectiousness (13, 9 and 6 days, respectively). In cattle, rabies produced signs of sharp excitation, salivation, rejection of feed, pareses, and palsies, which lasted 5-6 days. After the animals perished, diagnosis was confirmed by morphological and immunofluorescent studied of the brain. The virus in rabid sheep, dogs, cats, and foxex was determined in the saliva, blood, glands, spleen, lymph nodes, cornea and liquid of the anterior chamber of the eye, pancreas, kidneys, and urine; in cattle, the virus was found in the blood, milk, urine, and salivary glands. It was concluded that rabies need not be a fatal disease; however, further studies are necessary.

2/2

USSR

UDC: 669.295:621.785.34.061

BORISOVA, Ye. A., SHASHENKOVA, I. I., GLEBOVA, R. D.

"Vacuum Annealing of Titanium Alloys"

Moscow, Metallovedeniye i Termicheskaya Obrabotka Metallov, No 5, 1972 pp 10-13.

Abstract: The high chemical activity of titanium at high temperatures requires that heat treatment of finished products be performed in a medium of neutral gasses or in a vacuum. This work studies the influence of various vacuum annealing modes on the service properties of titanium alloys. The studies were performed by extension of specimens with two lateral cracks symmetrically placed relative to the axis, by testing of flat specimens under hydraulic pressure, and by endurance and low-cycle fatigue testing of smooth and welded specimens. The studies performed showed that vacuum annealing causes etching of the surfaces of titanium alloy parts, particularly along the boundaries of a welded seam. Therefore, in determining the vacuum annealing mode, the operating conditions of the products to be annealed must be considered. For thin sheet-welded parts which will operate under conditions of repeated loading, vacuum annealing may be used as a final operation at temperatures of incomplete annealing for stress relief. Vacuum annealing can also be used to reduce the total content of hydrogen in an alloy. The depth of the irregularities of the surface layer increases with increasing vacuum annealing temperature and holding time.

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USSR

UDC 669.295:539.4.011

BORISOVA, Ye. A., SHASHENKOVA, I. I., and GLEBOVA, R. D., Moscow

"The Effect of Oxygen and Hydrogen on the Strength of Titanium Alloys"

Moscow, Izvestiya Akademii Nauk USSR, Metally, No 5, Sep-Oct 72, pp 104-110

Abstract: The effect of oxygen and hydrogen on the variation in strength of semifinished goods and parts of titanium alloys was investigated by short-term and prolonged load actions on 2-mm-thick specimens of OT4, VT6S, and VT14 alloys, depending on the presence of stress concentrators and the oxygen and hydrogen content. The experimental investigation results are analyzed by reference to diagrams showing the effects of different O and H contents on the crack sensitivity, the structural strength after annealing and hardening and aging, and the relative long-term strength of specimens with cracks. Tabulated results of the effect O and H (0.15, 0.25 and 0.35% O_2, and 0.007 to 0.045% H_2) on the mechanical properties are discussed. An increase of O and H contents over a certain level was found to be conducive to premature failure. The efficiency of H as an embrittlement agent is ten times higher than that of O. The embrittlement action of H intensifies with increasing ultimate strength. Six figures, three tables.

1/1

SHASHIKASHVILI, N. R.

So: JPRS 55804
16 Feb 73

UDC: 614.2(479.22)(091)

ACHIEVEMENTS IN GEORGIAN PUBLIC HEALTH CARE IN 50 YEARS

[Article by Professor N.R. Shashikashvili (Tbilisi), Docent A.I. Karchava, Chair of Social Hygiene and Public Health Organization (headed by Professor N.R. Shashikashvili), Tbilisi Institute for the Advanced Training of Physicians; Moscow, Sovetskoye Zdravookhraneniye, Russian, No 1, 1972, submitted 31 March 1971, pp 54-57]

On 25 February 1921 the working people of Georgia, under the guidance of the Communist Party, obtained national and social freedom, and Soviet rule was established. This day marked the start of a period of unprecedented growth of spiritual and material forces of the Georgian people. Thanks to the wise Leninist national policy of the Soviet government, to the aid of all of the people of the USSR, and first of all the Russian people, Georgia was transformed into a republic with a well developed industry and multifaceted mechanized agriculture yielding excellent harvests, like in the legendary land of plenty, and into a republic with a high cultural level.

At the same time as the economy and culture of Georgia developed, so did its true public health service, the offspring of the Great October Socialist revolution. Soviet rule, which created all the necessary conditions for an upsurge of all branches of science, including medicine, to a level unheard of and impossible in a capitalistic society, implemented the solutions to all of the major public health problems, and public health care became the most important function of a Soviet Socialist nation.

In Georgia, from the time of inception of public health it was based on the abundant knowhow, forms, and methods of health care of Soviet Russia. The very first edicts of the Revolutionary Committee nationalized the pharmacies and therapeutic institutions on a national scale, provided for requisition of medical and pharmaceutical assets, introduced social insurance for blue and white collar workers etc. This enabled the newly formed public health agencies of the republic to overcome all difficulties, to deploy a war against epidemics, to direct medical care for the people on the right course.

USSR

UDC 51:621.391

BELOV, I. B., SHASHIN, A. M.

"Model of a Channel With Grouped Errors"

Tr. Leningr. in-t aviats. priborostr. (Works of the Leningrad Institute of Aviation Instrument Building), 1972, No. 74, pp 71-75 (from RZh-Matematika, No 11, Nov 72, Abstract No 11V368)

Translation: A discrete binary communication channel with grouped errors is considered as a channel which can be found in two possible states with probabilities α_1 and α_2 ($\alpha_1 + \alpha_2 = 1$). Each state of the channel is described by a model of a binary symmetric channel with transition probabilities $p_1 = 1/2$ and p_2. It is assumed that information is transferred by binary units (n, k)-codes so that the channel is in one of its possible states in the transfer of a specific code word. A technique is given for experimentally determining the parameters of this model. Certain probability characteristics obtained with the aid of the given model are compared with experimental data. Authors abstract.

1/1

USSR

UDC: 51:621:391

BELOV, I. B., SHASHIN, A. M.

"Model of a Channel with Grouped Errors"

Tr. Leningr. In-t Aviats. Priborostr. [Leningrad Institute of Avintion Instrument Building], 1972, No 74, pp 71-75 (Translated from Referativnyy Zhurnal Kibernetika, No 11, 1972, Abstract No 11V368, by the authors)

Translation: A discrete binary communications channel with grouped errors is studied as a channel which can be in either of two posssible states with probabilities α_1 and α_2 ($\alpha_1+\alpha_2=1$). Each state of the channel is described by a model of a binary symmetrical channel with transition probabilities $p_1=1/2$ and p_2. It is assumed that information is transmitted with binary block (n, k) codes, and that the channel is in one of its possible states during transmission of a specific word. A method is presented for experimental determination of the parameters of this model. Certain probability characteristics produced using the model are compared with experimental data.

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USSR

UDC 669.018.298

YEPIKHIN, M. A., ZABOLEYEV-ZOTOV, V. V., PISAREV, S. P., SHASHIN, A. V.

"Effect of a Third, Previously Formed Phase on the Hardness of Certain Aging Alloys"

V sb. Metallovedeniye i prochnost' materialov. T. 3 (Physical Metallurgy and the Material Strength. Vol 3 -- collection of works), Volgograd, 1971, pp 341-345 (from RZh-Metallurgy, No 4, Apr 72, Abstract No 4I633)

Translation: A study was made of the hardness of aging alloys hardened simultaneously by particles of intermetallides isolated during the aging process and solid particles of a third previously formed phase of the Cr oxide and Al oxide type introduced into the melt (AK4 alloy with different amounts of additives of Cr oxide and BRA9 aluminum bronze powder with different Al oxide content). For the case of the bronze, a sharp drop in the hardness increment was observed on reaching a third phase concentration of 30-40 volumetric % whereas for the AK4 alloys this decrease was observed at 4-5 volumetric %. It is expedient to use a dispersion hardening base in order to increase the strength characteristics of the alloys hardened by disperse inclusions only for defined content of the third phase in it, considering also the size of the inclusions. Two illustrations and a 1-entry bibliography.
1/1

1/2 023 UNCLASSIFIED PROCESSING DATE--04DEC70

TITLE--EFFECT OF A CUT ON THE CYCLIC STRENGTH OF STEEL -U-

AUTHOR-(02)-SHASHIN, M.YA., KUZKO, E.R.

COUNTRY OF INFO--USSR

SOURCE--MOSCOW, VESTNIK MASHINOSTROYENIYA, NO 3, 1970, PP 33-35

DATE PUBLISHED--------70

SUBJECT AREAS--MATERIALS, MECH., IND., CIVIL AND MARINE ENGR

TOPIC TAGS--STRESS, CYCLIC STRENGTH, STEEL PROPERTY, METAL CUTTING/(U)40KH STEEL, (U)38KHMYUA STEEL, (U)U81 STEEL, (U)KH18N9T STEEL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3003/1980 STEP NO--UR/0122/70/000/003/0033/0035

CIRC ACCESSION NO--AP0130755

UNCLASSIFIED

2/2 023 UNCLASSIFIED PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0130755

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. SENSITIVITY TO AN ANNULAR CUT IS STUDIED AS IN RELATION TO STRENGTH, TECHNOLOGICAL FACTORS, AND METHOD OF DETERMINING THE THEORETICAL STRESS FACTOR DURING ALTERNATING LOADING OF CONSOLE TYPE CYLINDRICAL SPECIMENS WITH DIAMETERS D EQUALS 12 AND D EQUALS 10 MM MADE FROM 40KH, 38KHMYUA, U81, AND KH18N9T GRADES OF STEEL.

UNCLASSIFIED

USSR

UDC: 621.376.56:621.373.029.67

GUSEV, A. A., NIKITIN, V. V., SEMENOV, G. I., and SHASHIN, V. I.

"Switching Device Using an Injection Semiconductor Laser"

Moscow, Kvantovaya elektronika, No 7, 1972, pp 92-94

Abstract: Recently, successful use has been made of semiconductor lasers for rapid-operation optical logic elements. With the idea of using such lasers as a rapid switching device for multiplex telemetric systems, the authors of this brief communication have investigated such a laser switch, with special attention to its dynamic range and noise characteristics. The block diagram of the experimental equipment with which this investigation was conducted is built around two GaAs lasers, cooled to the temperature of liquid nitrogen, and silicon photodiodes. The lasers are fed by independent current pulse generators with signal amplitudes continuously variable from zero to 20 A, the injection current being measured. The laser radiation emerges from a plane-parallel window of the cryostat and is recorded by the photodiodes, the output of which is connected to an S1-15 oscillograph. By means of this equipment, curves of the output power of the lasers and the laser switching device as a function of the injection current were plotted. The authors conclude that the lasers can be used

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USSR

UDC: 621.376.56:621.373.029.67

GUSEV, A. A. et al, Kvantovaya elektronika, No 7, 1972, pp 92-94

as ultra-rapid switching devices with a dynamic range of 10^3-10^4, especially since semiconductor lasers capable of operating at room temperature and above have recently been developed. The authors express their gratitude to V. D. Samoylov for his discussion of the experimental results, and to Yu. P. Zakharov and V. F. Litvinov for their assistance with the experiments.

2/2

USSR

UDC 532.525

SHASHKIN, A. P., Institute of Theoretical and Applied Mechanics, Siberian Department, USSR Academy of Sciences, Novosibirsk

"Determination of the Form of a Plane Supersonic Nozzle"

Novosibirsk, Izvestiya Sibirskogo Otdeleniya Akademii Nauk SSSR, Seriya Tekhnicheskikh Nauk; Issue 1 No 3, 1973, pp 52-55

Abstract: Determination of the form of the supersonic portion of an axisymmetrical, plane-symmetrical or plane nozzle in which one of the walls is given, reduces to the solution of the variation problem in a triangle limited by the sought-for contour and by the characteristics of the first and second families emerging from the beginning and end of the contour.

Considered here is the construction of two walls of the supersonic portion of a plane-nonsymmetrical jet, in the case in which the construction reduces to the solution of the variation problem in a quadrangle limited by the upper and lower contours and by the characteristics of the first family emerging from the beginning and end of the lower contour.

Results of the calculation of forms for several nozzle contours are given, along with the corresponding relationships between thrust and length. It was found that the sign of wall curvature may reverse.

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Acc. Nr. AT0102939 Abstracting Service: CHEMICAL ABST. 6-70 Ref. Code UR0139

116195h X-ray absorption spectra of cobalt in ferromagnetic borides. Zhurakovskii, E. A.; Shashkina, T. B.; Kotlyar, V. I. (Odess. Pedinst. im. Ushinskogo, Odessa, USSR). *Izv. Vyssh. Ucheb. Zaved., Fiz.* 1970, 13(1), 24–8 (Russ). The x-ray absorption *K*-spectra (7700–40 eV) of Co_3O_4, CoB (m. 1460), Co_2B (m. 1280), Co_3B (m. 1125°), and pure Co were measured and compared with magnetic properties of the compds. The [1340] plane of the quartz single crystal (curvature diam. 500 mm) was used as an analyzer. The resoln. was ~14,000; the Ni $K\alpha_1$ and Ni $K\alpha_2$ lines were used as stds. for the energy scale. With increasing content of B in Co borides, a redistribution of the valence-active electrons between the Co-Co, Co-B, and B-B bonds occurs, which results mainly in an increase of strength of the B-B bonds. With increasing no. of B atoms in the borides, absorptivity of the initial absorption region shows practically a linear decrease; it indicates a considerable absorption ability of the 3*d* level of Co as related to the valence-active *p* electrons of the B atom. The intensity decrease is ended by appearance of diamagnetism for CoB, where the complete spin satn. and filling of vacancies in the 3*d* level is supposed. The steepest concn. dependence of the intensity of the initial absorption region is related to the transitions of B *sp* electrons, preferentially, into the region of Co 3*d* states. Vaclav Sara

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REEL/FRAME
19861005

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18

Acc. Nr.: AM0044941 S

Ref. Code: UR0000

Shashkov, A. G.; Abramenko, T. N.

Heat Conductivity of Gaseous Mixtures (Teploprovodnost' gazovykh smesey) Moscow, Energiya, 1970, 287 pp (SL:1891)

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Reel/Frame
19771799

AM0044941

Appendix
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The molecular-kinetic theory is used as a basis for presentation of the theory of heat conductivity of mono and multiatomic gases and their mixtures at various temperatures...

The book was written for heat engineering students, post-graduate students and scientists.

2/7

19771800

1/2 016 UNCLASSIFIED PROCESSING DATE--11SEP70

TITLE--BRAZING ALLOY FOR CAST IRON -U-

AUTHOR--SHASHKOV, A.N., ASINOVSKAYA, G.A., ILINA, I.I.

COUNTRY OF INFO--USSR

SOURCE--BRIT. 1, 186,249

DATE PUBLISHED--02APR70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--CAST IRON, CHEMICAL PATENT, HARDNESS, BRAZING ALLOY, CAST IRON, CHEMICAL COMPOSITION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1990/0532 STEP NO--UR/0000/70/000/000/0000/0000

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2/2 016 UNCLASSIFIED PROCESSING DATE--11SEP70

CIRC ACCESSION NO--AA0108750

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A BRAZING ALLOY SUITABLE FOR JOINING OR REPAIRING DEFECTS IN CAST IRON CONTAINS CU 49-50, MN 9.5-10.5, NI 3.5-4.5, SN 0.8-1, AL 0.15-0.25PERCENT AND BALANCE ZN SIMILIAR TO 36PERCENT ZN, AND HAS ABOUT THE SAME COLOR AS CAST IRON, 170-90 BRINELL HARDNESS, AND A LOW M.P. SO THAT IRON CASTINGS ARE NOT DEFORMED BY ITS USE. THE MN AND NI ELIMINATE THE YELLOW COLOR OF BRASS, AND AL PREVENTS A PINK TINGE FROM APPEARING ON MACHINED SURFACES FROM OXIDN. OF MN. THE SN CONTENT INCREASES THE FLUIDITY AND WETTING ABILITY OF A MELT IS GREATER THAN 850DEGREES. A FLUX COMPOSED OF H SUB3 BO SUB3 50, LI SUB2 CO SUB3 25, AND NA SUB2 CO SUB3 25PERCENT IS PREFERABLY USED WITH THIS ALLOY IN BRAZING CAST IRON WHICH DOES NOT THEN REQUIRE PREHEATING IS GREATER THAN 750DEGREES. THE IRON IS NOT CRACKED, CHILLED, OR WARPED BY SUCH BRAZING. THE PREHEATING AND BRAZING CAN BE DONE WITH AN OXY ACETYLENE FLAME. A GOOD ALLOY COMPN. WAS CU 43.9, MN 10.1, NI 3.9, SN 0.99, AL 0.2PERCENT, AND ZN BALANCE. ITS LIQUIDUS TEMP. WAS 847DEGREES.

ZZZZZZZZZZZZ UNCLASSIFIED

USSR

UDC 541.15

BOL'SHAKOVA, S. I., SHASHKOV, A. S., DEGTEVA, T. G., KUZ'MINSKIY, A. S., Scientific Research Institute of Rubber Industry, Moscow

"NMR-Study of Structural Changes in Rubber During Low-Temperature Radiolysis"

Moscow, Khimiya Vysokikh Energiy, Vol 5, No 4, Jul-Aug 71, pp 361-362

Abstract: An attempt was made to determine the radiolysis and ion excitation effects of primary reactions occurring during the irradiation and of those of the stabilized portion of active forms which disappear when molecular mobility is restored in the β- or γ-relaxation area. The nuclear magnetic resonance (NMR) method was used to ascertain chemical changes in butadiene-nitrile rubber during low-temperature radiolysis, using a JNM-3 spectrometer at a maximum of 35 Mrad. One table and one figure are used to illustrate the formation of additional chemical bonds leading to closer packing of macromolecules when the test rubber was brought back to room temperature, thus changing the properties of the material.

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1/2 020 UNCLASSIFIED PROCESSING DATE--04DEC70

TITLE--POSSIBLE IDENTIFICATION OF INTERACTION IN A POLYMER PLASTICIZER SYSTEM USING NUCLEAR MAGNETIC RESONANCE -U-

AUTHOR-(03)-NOVIKOV, N.A., SHASHKOV, A.S., GALILOGLY, F.A.

COUNTRY OF INFO--USSR

SOURCE--VYSOKOMOL. SOEDIN., SER. B 1970, 12(5), 323-4

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY, MATERIALS

TOPIC TAGS--PLASTICIZER, SYNTHETIC RUBBER, FLUORINATED ORGANIC COMPOUND, NITRILE RUBBER, STYRENE, NUCLEAR MAGNETIC RESONANCE, CHLOROPRENE/(U)SKF32 FLUORINATED RUBBER, (U)SKN26 NITRILE RUBBER, (U)SKS30 STYRENE RUBBER

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3007/1012 STEP NO--UR/0460/70/012/005/0323/0324

CIRC ACCESSION NO--AP0136439

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2/2 020 UNCLASSIFIED PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0136439

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. IN SKF-32 PLASTICIZED WITH DI-BU SEBACATE (I), PHCOME, OR PH SUB2 O, OR NEOPRENE S-40 AND SKN-26 PLASTICIZED WITH I (INTRAMOL. PLASTICIZATION), THERE WAS A POS. DEVIATION OF THE SECOND MOMENT (DELTA H SUB2 PRIME2 GREATER THAN 0) AND THE PLOT OF DELTA H SUB2 PRIME2 VS. PLASTICIZER CONCN. HAD A MAX. ON THE OTHER HAND, IN SKF-32 PLASTICIZED WITH PH SUB2 OF SKS-30 PLASTICIZED WITH MINERAL OIL (INTERMOL. PLASTICIZATION) THERE WAS NO DEVIATION OF DELTA H SUB2 PRIME2 FROM THE ADDITIVE FORMULA (DELTA H SUB2 PRIME2 EQUALS 0).

UNCLASSIFIED

1/2 042 UNCLASSIFIED PROCESSING DATE--02OCT70

TITLE--BRITTLENESS OF SINGLE CRYSTALS OF METALLIC COMPOUNDS -U-

AUTHOR--SHASHKOV, D.P.

COUNTRY OF INFO--USSR

SOURCE--FIZ. METAL. METALLOVED. 1970, 29(1) 168-74

DATE PUBLISHED-------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--COPPER ALLOY, ALUMINUM ALLOY, NICKEL ALLOY, TIN ALLOY, INTERMETALLIC COMPOUND, BRITTLENESS, RESISTIVITY, SINGLE CRYSTAL, MANGANESE ALLOY, SILICON ALLOY, COBALT ALLOY, IRON ALLOY, GERMANIUM ALLOY, ARGON

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1983/0702 STEP NO--UR/0126/70/029/001/0165/0174

CIRC ACCESSION NO--AP0105677

UNCLASSIFIED

2/2 042 UNCLASSIFIED PROCESSING DATE--02OCT70

CIRC ACCESSION NO--AP0105677

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE CHANGE IN THE PHYS. PROPERTIES OF SINGLE CRYSTALS OF MNSI, FESI, COSI, EPSILON (NI,GE), NI SUB3 SN SUB2, AND CUAL SUB2 WITH INCREASED TEMP. WAS STUDIED, AND COMPARISONS WERE MADE WITH POLYCRYSTALS OF THE SAME COMPN. ELEC. RESISTIVITY AND THERMAL EMF. OF THE SAMPLES WERE DETD. THE PHYS. PROPERTIES WERE MEASURED IN A PURIFIED AR ATM. THE TEMP. THRESHOLD OF BRITTLENESS AND THE FLEXURAL STRENGTH OF THESE SAMPLES WERE ALSO STUDIED, AS WERE THE PLASTIC PROPERTIES. SINGLE CRYSTALS OF THE METALLIC COMPDS. STUDIED GO FROM THE BRITTLE TO THE PLASTIC STATE AT LOWER TEMPS. MORE READILY THAN POLYCRYSTALS OF THE SAME COMPDS. DUE TO THE ABSENCE OF THE GRAIN BOUNDARIES IN THE SINGLE CRYSTALS. THE ELEC. RESISTIVITY OF SINGLE CRYSTALS OF METALLIC COMPDS. INCREASES UPON HEATING THEM TO A GIVEN TEMP., ABOVE WHICH IT INCREASES ONLY SLIGHTLY OR DOES NOT CHANGE AT ALL FOR ALL PRACTICAL PURPOSES UP TO THE M.;.; THE SAME IS TRUE OF POLYCRYSTALS. THE ONLY DIFFERENCE IS THAT FOR SINGLE CRYSTALS THIS ANOMALOUS CHANGE OCCURS AT LOWER TEMPS. THAN FOR POLYCRYSTALS. THE THERMAL EMF. STARTS TO DECREASE SIGNIFICANTLY FROM APPROX. THE SAME TEMPS. AS THE ELEC. RESISTIVITY. THE TEMP. THRESHOLD OF BRITTLENESS OF SINGLE CRYSTALS OF THESE COMPDS. IS WITHIN THE TEMP. RANGE OF ANOMALOUS CHANGE OF ELEC. RESISTIVITY, AND AGAIN AT A LOWER TEMP. THAN FOR POLYCRYSTALS. THE BRITTLENESS IN BOTH SINGLE CRYSTALS AND POLYCRYSTALS HAS THE SAME NATURE, BEING A RESULT OF THE EXISTENCE OF ORIENTED INTERAT. BONDS. THEIR TRANSITION FROM THE BRITTLE TO THE PLASTIC STATE IS CAUSED BY INCREASED PORTION OF THE METALLIC BOND PRESENT.

UNCLASSIFIED

USSR

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UDC 620.173

SHASHKOV, D. P., Moscow Aubomobile and Road Institute

"Brittleness of Metal-Alloy Single Crystals"

Sverdlovsk, Akademiya Nauk SSSR, Fizika Metallov i Metallov i Metallovedeniye, Vol 29, No 1, Jan 70, pp 168-174

Abstract: A comparative study was made of variations in the physical properties of single crystals of various alloys with increasing temperature and of polycrystals obtained from the same alloys. Tests were conducted on single and polycrystals of ferrous (FeSi), manganese (MnSi), and cobalt (CoSi) silicides, nickel-arsenide type ξ (Ni, Ge), Ni_3Sn_2 phases, and $CuAl_2$ alloys. Bending tests at increasing temperature on single and polycrystals showed that the brittleness threshold temperature of single crystals is substantially lower than that of polycrystals. The electrical resistance of single and polycrystals increases with heating up to a certain definite temperature, above which the resistance either decreases or remains unchanged up to the melting temperature. In contrast to polycrystals, the anomalous resistance variation in single crystals occurs at much lower temperatures. The decrease in the thermoelectric force in single crystals coincides with the decrease in electrical resistance, while a certain

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USSR

SHASHKOV, D. P., et al, Akademiya Nauk SSSR, Fizika Metallov i Metallovedeniye, Vol 29, No 1, Jan 70, pp 168-174

deviation from a rectilinear behavior appeared on the dilatograms. The brittleness of single crystals has, in principle, a structure, close to the polycrystal, resulting from the existence of oriented interatomic bonds. Orig. art has: 5 figures.

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USSR

UDC 577.1:615.7/9

VASIN, M. V., SAKSONOV, P. P., ANTIPOV, V. V., and SHASHKOV, V. S.

"Antiradiation Effectiveness of Cystamine Under Varying Conditions of gamma-Irradiation"

V sb. Probl. kosmich. biol. (Problems in Space Biology -- Collection of Works), Vol 14, Moscow, "Nauka" (Science), 1971, pp 121-131 (Russian) (from RZh-Biologicheskaya Khimiya, No 20, 25 Oct 71, Abstract No 20F1712 from summary)

Translation: It was established that with intraperitoneal injection of cystamine 5-10 minutes before gamma-irradiation (139-159 roentgens/min) a linear dependence of radioprotective activity (RA), as determined from the cystamine dose reduction factor, on the drug dose is observable. Increasing the time of the injection of cystamine in a dose of 150 mg/kg (30 min before irradiation) had no effect on cystamine RA. Injection of cystamine 1 hours before irradiation sharply lowered -- and 8-12 hours before completely canceled -- cystamine RA. With doses of 50-100 mg/kg a lowering of RA was noted in earlier stages. With irradiation for 1.5-4 hours (total dose 950-1200 roentgens) the RA of cystamine, cystaphos, 5-methoxytriptamine and S, ß-aminoethylisothiuronium bromide hydrobromide (AET) declined sharply.

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USSR

UDC 577.391

SHASHKOV, V. S., ANASHKIN, O. D., SUVOROV, N. N., and MANAYEVA, I. A.,

"Effectiveness of Serotonin, Mexamine, AET, and Cystamine Administered Repeatedly After Gamma-Irradiation"

Moscow, Radiobiologiya, Vol 11, No 4, Jul/Aug 71, pp 621-623

Abstract: After rats had been irradiated with gamma-rays in a dose of 800 r, serotonin, mexamine (5-methoxytryptamine HCl), AET (S-betaaminoethylthiouronium bromide HBr), or cystamine was administered to them intraperitoneally four times (5, 15, 30, and 45 min after irradiation). As compared with a 10% rate of survival for control rats 30 days after irradiation, the rate of survival on administration of serotonin in four single doses of 2.3 and 3 mg/kg was 50 and 40%, respectively; on administration of mexamine in single doses of 2.5 and 4 mg/kg, 18 and 23.5%, respectively; on administration of cystamine in single doses of 3.33 and 5 mg/kg, 36 and 19%, respectively; and on administration of AET in single doses of 2 and 5 mg/kg, 44 and 23.5%, respectively. The results showed that the radiation protectors exerted a therapeutic effect in the doses indicated, which were small in comparison with the optimal doses effective on administration before irradiation. When the single doses of the substances tested were increased above the higher of the

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USSR

SHASHKOV, V. S., et al., Radiobiologiya, Vol 11, No 4, Jul/Aug 71, pp 621-623

two mentioned, the rate of survival of the animals was reduced, reaching zero on the 30th day after irradiation.

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SHASHKOV, V. S.

JPRS 56030
18 May 72

UDC 612.014.31-087.54612.014.3.014.46:615.214.3

PERFORMANCE, METHODS OF EVALUATING IT, AND DRUG STIMULATION

[Article by V. S. Shashkov and N. V. Gorinchenya; Moscow, Kosmicheskaya biologiya i meditsina, Russian, Vol 6, No 2, March-April 1972, pp 3-13, submitted for publication 25 March 1971]

The performance problem is of interest to specialists in many fields of medicine and biology, veterinary medicine and agriculture, teaching and sociology, and others. It is now impossible to visualize human life and activity separately from man's performance. It assumes particular importance in relation to man's conquest of space. However, published studies cover only some aspects of this problem. We will discuss some of the special problems involved in studying performance.

The first question to arise is how to evaluate the nature of man's general performance. Can the total degree of fatigue be characterized by the simple summation of the indices of decrease in psychic and physical performance? Is there a change in the threshold of physical performance when psychic fatigue predominates and what should be the stimulation principles in these cases? Although these questions by their very nature belong to the philosophy of biology, they cannot be solved speculatively and their solution must be based on experimental data. In order to obtain such data it is most important to develop a method for determining the qualitative and quantitative characteristics of the studied process.

There are many methods for evaluating the psychic performance of man. Most of these have been developed applicable to different fields of occupational activity. Man's physical performance can be studied in accordance with the recommendations of the International Biological Program which include a series of methods and tests for functional diagnosis and these have been described in detail in the collection of articles Fiziches kaya Rabotosposobnost' (Physical Performance) (Novosibirsk, 1970).

It should be noted that there can be no clear discrimination of the concepts "psychic" and "physical" performance.

SHASHKOV, V. S.

JPRS 55687
12 July 1972

UDC 612.388-064.014.46:615.849.1.015.25/:612.766.2

EFFECT OF RADIOPROTECTANTS ON THE FUNCTIONAL STATE OF HISTO-HEMATIC BARRIERS IN RESTRICTED ANIMALS

[Article by V. V. Sabayev, V. S. Shashkov, P. V. Sergeyev, V. A. Chistyakov and N. A. Seydametov; Moscow, Kosmicheskaya Biologiya i Meditsina, Russian, Vol 6, No 1, pp 7-10, 1972, submitted for publication 15 March 1971]

Abstract: The effect of mexamine and cysteamine on the permeability of histo-hematic barriers in intact and restricted animals was studied. During the experiments rats were kept under hypokinetic conditions for 10 days. Intraperitoneal injections of radioprotectants increased substantially the I131-albumin permeability of tissue barriers in most organs and tissues. In response to an injection of radioprotectants during the 10-day hypokinetic experiment the label transfer through the humato-encephalic barrier and tissue barriers of the femur and back muscles, thymus and adrenals increased to a lesser extent.

Hypokinesia causes a change in the biological tolerance of the body to exposure to a number of unfavorable environmental factors. For example, the results of investigations made by E. A. Lampusov, V. A. Shkurdoda (1962, 1963), V. M. Seraya and I. A. Abukumova revealed a considerable decrease in the body tolerance to irradiation in animals which were totally or partially immobilized. In addition, there are indications that under the influence of weightlessness and restriction of motor activity there is a change in the intensity and direction of the effect of drugs (V. V. Parin, et al.; V. Ye. Belay and P. V. Vasil'yev). The system of histo-hematic barriers is one of the mechanisms ensuring the operation of the regulatory-protective function directed to the retention of homeostasis.

This paper is devoted to a study of the effect of radioprotectants on the permeability of tissue barriers in animals with restricted motor activity.

Method

The work was done using 125 sexually mature males of nonlinear white rats weighing 170-190 g. Two series of experiments were carried out. In the

USSR

UDC 577.1:615.7/9

SHASHKOV, V. S., ANISIMOV, B. V., and SAKSONOV, P. P.

"Chemical Prophylactics for Radiation Sickness"

V sb. Probl. kosmich. biol. (Problems in Space Biology -- Collection of Works), Vol 14, Moscow, "Nauka" (Science), 1971, pp 86-102 (Russian) (from RZh-Biologicheskaya Khimiya, No 20, 25 Oct 71, Abstract No 20F1711 from summary)

Translation: This is a survey which considers the basic groups of chemical radioprotectors, the effectiveness of their combined use, possible mechanisms of action for chemical radioprotectors (radical inactivation, physicochemical changes in molecules of the biosubstrate, oxygen effect, influence on metabolic processes and recovery processes). Bibliography with 42 titles.

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